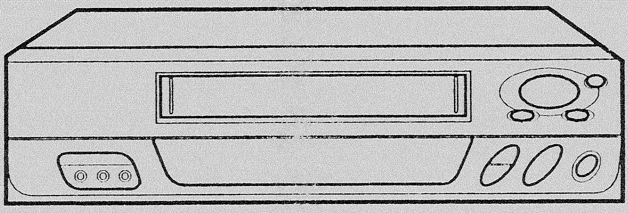
LIFETEC®

LT 8950

SERVICE MANUAL

VIDEO CASSETTE RECORDER



ORIGINAL
CHASSIS CODE A

Design and specifications are subject to change without notice.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   You can find it in the back of your unit.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

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GENERAL SPECIFICATIONS

G-1. Outline of the Product

2 -Speed 1/2" Video Cassette Recorder

G-2. VCR Format

VHS Standard ☐NTSC ☒PAL ☐SECAM ☐PAL-M ☐PAL-N

☒VHS Hi-Fi Audio System

G-3. Video Recording System : Rotary,slant azimuth two head helical scan system

Luminance Component : FM recording

Chrominance Component: Low frequency converted direct recording

G-4. Broadcasting System

CCIR System B/G

G-5. Color System ☐NTSC ☒PAL ☐SECAM or Monochrome

G-6. NTSC Playback(PAL60Hz) ☒Yes ☐No

G-7. MESECAM ☐Yes ☒No

G-8. Cassette Tape

☒VHS type video cassette tape Width 12.65mm (1/2 Inch)

☐VHS-C type video cassette tape Width 12.65mm (1/2 Inch)

G-9. Tape Speed

NTSC or PAL-M		PAL or SECAM	
☒SP	33.35 mm/sec	☒SP	23.39 mm/sec
☐LP	16.67 mm/sec	☒LP	11.69 mm/sec
☐SLP	11.12 mm/sec		

G-10. Recording/Playback Time

NTSC or PAL-M(NTSC Playback Only)

☒at SP Mode Max. 210 min. (with T-210 cassette)

☐at LP Mode Max. 420 min. (with T-210 cassette)

☐at SLP Mode Max. 630 min. (with T-210 cassette)

PAL or SECAM

☒at SP Mode Max. 300 min. (with E-300 cassette)

☒at LP Mode Max. 600 min. (with E-300 cassette)

G-11.Rewind/Fast Forward Time(Approx.)

☐ FF: 3'40"/Rew:2'50" (with ☐T-120 cassette ☐E-180 cassette)

☒ FF: 1'48"/Rew:1'48" (with ☐T-120 cassette ☒E-180 cassette)

G-12.Search Speed

☒SP 5 and 7 Times (PAL)

☒LP 7 and 13 Times (PAL)

☒SP 3 and 5 Times (NTSC)

G-13.Slow Speed

☒SP 1/5~1/30 Times

☒LP 1/5~1/30 Times

☐SLP ________ Times

G-14.Frame Advance

☒SP 1/10 Times

☒LP 1/10 Times

☐SLP ________ Times

G-15.Antenna Input Impedance

VHF/UHF 75 ohm unbalanced

GENERAL SPECIFICATIONS

G-16.Tuner and Receiving Channel

Tuner: Contactless Electric Tuner

☐Oscar(W/O HYPER) ☒Oscar(W/ HYPER) ☐France CATV ☐Others

Receiving Channel

VHF (LOW) E2 ch~ S6 ch ch~ ch
(HIGH) S7 ch~ S36 ch ch~ ch
(CATV) E2 ch~ S41 ch ch~ ch
UHF S37 ch~ 69 ch ch~ ch

Tuning System

☒Frequency syn. ☐Voltage syn. ☐Others

G-17.Preset Channel

No 80 channels
Allocation ch ~ ch
ch ~ ch
ch ~ ch

G-18.Intermediate Frequency

Picture(FP) 38.9 MHz MHz MHz
Sound (FS) 33.4 MHz MHz MHz
FP-FS 5.5 MHz MHz MHz

G-19.RF Converter Output

Channel 36 ch. 23 ~ 69
Level/Impedance 73 dBμ / 75 ohm
Sound Selector ☐Yes(☐G ☐I ☐K) ☒No

G-20.Stereo/Dual TV Sound

☒Yes(☐NICAM ☒GERMAN ☐USA ☐JAPAN) ☐No

G-21.Tuner Sound Muting ☒Yes ☐No

G-22.Video Signal

Input Level 1 Vp-p / 75 ohm
Output Level 1 Vp-p / 75 ohm
S/N Ratio 53 dB (Weighted)
Horizontal Resolution at SP Mode 240 Lines

G-23.Audio Signal

Input Level Microphone - dB / - Kohm
Line -3.8 dB / 50 Kohm
RCA -3.8 dB / 50 Kohm

Output Level Line -3.8 dB / 1 Kohm
RCA -3.8 dB / 1 Kohm(0dB=0.775 Vrms)

S/N Ratio at SP Mode 42 dB (Weighted)
Harmonic Distortion : 1.5 % (1KHz)

Frequency Response : at SP Mode 100 Hz ~ 10 KHz
at LP Mode 100 Hz ~ 5 KHz
at SLP Mode Hz ~ KHz

G-24.Heads

Video ☒ 4 Rotary Heads
FM Audio ☒ 2 Rotary Heads
Audio / Control ☒ 1 Stationary Head (☒Mono ☐Stereo(L,R))
Erase ☒ 1 Full Track Erase

G-25.Motor: 3 Motors

☒Tape/Cassette Loading
☒Cylinder (Direct Drive)
☒Capstan (Direct Drive)

G-26.Power Source

230 V ☒AC 50Hz ☐AC 60Hz

G-27.Power Consumption: 14 W at AC 230 V 50 Hz(Approx.)
Stand by: 4.0 W at AC 230 V 50 Hz(Approx.)
Per Year: - kWh / Year

GENERAL SPECIFICATIONS

G-28.Dimensions(Approx.)

380 mm(W) 268 mm(D) 95 mm(H)

G-29.Weight(Approx.)
Net : 3.5 (- lbs)
Gross : 4.5 (- lbs)

G-30.Cabinet Material
Cabinet Front:
☒PS
☐ABS
☒94HB
☐94V2
☐94V0
☐DECABROM
☐NON-DECA

G-31.Cassette Loading System: Front Cassette Loading System

G-32.Tape Counter: Linear Time Tape Counter

G-33.Protector: ☒Power Fuse ☐Dew Sensor

G-34.Regulation
Safety
☐UL
☐NEMKO
☐SEMKO
☐NOM
☐CSA
☐FEMKO
☐NZ
☐AS3159
☐SAA
☐DEMKO
☐HOMOLO
☐DENTORI
☐SI
☐IEC65
☐SABS
☐UNE
☒CE
☐CNS
☐GOST
☐NONE
☐SEV
☐SISIR

Radiation
☐FCC
☐SABA
☐CNS
☐DOC
☐SI
☐CISPR13
☐PTT
☐NZ
☐DENTORI
☒CE
☐HOMOLO
☐AS/NZS
☐SEV
☐UNE
☐NONE

G-35.Temperature
Operation 5 °C ~ 40 °C
Storage -20 °C ~ 60 °C

G-36.Operating Humidity : Less than 80 %RH

G-37.Clock and Timer
Built-in 1 Month 8 Events Programmable Timer
One Touch Recording : Max Time SP 5 , LP 10 Hours

G-38.Timer back up Time
More than 30 Minutes (at Power Off Mode)

G-39.Terminals

☒VHF/UHF Antenna	☒Din Type	☐F-Type	☐France Type
☒Video Input(Front)	☒Phono Jack (RCA ø8.3)		☐BNC
☐Video Input(Rear)	☐Phono Jack (RCA ø8.3)		☐BNC
☐Video Output(Rear)	☐Phono Jack (RCA ø8.3)		☐BNC
☒Audio Input(Front)	☒Phono Jack (RCA ø8.3)x2		
☐Audio Input(Rear)	☐Phono Jack (RCA ø8.3)x2		
☒Audio Output(Rear)	☒Phono Jack (RCA ø8.3)x2		
☒21 Pin (x 2)			

G-40.Indicator
☐Power (______)
☐Stand By (______)
☐Rec (______)
☐Repeat (______)
☐Tape In (______)
☐Kurupika Guide (______)
☐One Touch Playback (______)

GENERAL SPECIFICATIONS

G-41.Display

Fluorescent Indicator

☒Clock/Counter,Channel,Timer Rec,OTR,Play,Rec,FF(Cue),Rew(Rev),
Stop,ATR,Eject ☒Pause ☒Still
☐WKL,Y.M.D,Start,End ☐AFT ☐Repeat ☒A - DUB
☒VCR ☐Memory ☐Index ☐VPS ☐PDC
☒SP ☒LP ☐SLP ☐AM ☐PM
☒F1 ☒F2

On Screen Display

☒Menu
☒ATS
☒Timer Rec Set
☒VCR Extention ☒Auto Repeat On/Off
☒Scene Repeat
☒Audio Dubbing
☒VCR Set-Up ☐NICAM Auto/Off
☒Audio Mix On/Off
☐Color System
☒Sharpness
☒CH Set-Up ☒CH Tuning
☐Auto Tuning
☒CH Mapping
☐Guide Ch Set
☐Pin Code Registration
☒System Set-Up ☒Clock Set(☒Calendar ☐12H ☒24H)
☒Language
☐Power Save
☒G-CODE(or SHOWVIEW or PLUSCODE)No. Entry
☐NICAM M1/2,NICAM Off,Audio Output
☒Stereo,Audio Output,Bilingual
☐Stereo,Audio Output,SAP ☐Stereo,Audio Output
☒Play/Stop/FF/Rew/Rec/OTR/Pause/Tape In/Eject(Picture)
☒CH/AV ☒Clock/Day/Date ☐Repeat ☐Pin Code
☒Tape Counter ☒Index ☐Hotel Lock ☒Tape Speed
☒Manual Tracking(Bar Setting) ☒Hi-Fi ☒S-Repeat
☒VPS ☐PDC ☒SR-R ☒SR-PLAY

G-42.OSD Language

☒Eng ☒Ger ☒Fre ☒Spa ☒Ita ☐Por ☐Jan

OSD Language Setting

☐Eng ☒Ger ☐Fre ☐Spa ☐Ita ☐Por ☐Jan
☐Not Applicable

G-43.Carton

Master Carton: ☐Need ☒No Need
Content: ---- Set
Material: ---- / ---- Corrugated Carton
Dimensions: ---- mm(L) ---- mm(W) ---- mm(D)
Description of Origin ☐Yes ☐No

Gift Box ☒Need(Buyer Supply) ☐No Need
Material ☐Single/Brown Corrugated Carton (☐ with Photo Label)
☐Single/White Corrugated Carton (☐ with Photo Label)
☒Single Full Color Carton W/Photo
Dimensions: 450 mm(L) 357 mm(W) 180 mm(D)
Design: As Per BUYER 's
Description of Origin: ☐Yes ☒No

Drop Test Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
Height ☐25cm ☐31cm ☐46cm ☐62cm ☒80cm ☐100cm

Container Stuffing: 2,206 Sets / 40' container

GENERAL SPECIFICATIONS

G-44.Accessories

☒Owner's Manual (☐ W/ Guarantee Card) [German]
☒Remote Control Unit
☐Video Cassette Tape
☐Safety Tip
☒Guarantee Card
☐Warning Sheet☒Quick Set-Up Sheet
☐Information Sheet
☒75 ohm Coaxial Cable (☐Single Shield ☒Double Shield)
☐300 ohm to 75 ohm VHF Antenna Adaptor
☐21pin Cable

☐Dew Caution Sheet
☒Battery (UM-__4 x 2__)
☐Toll Free Insert Sheet
☐Audio-Video Cord (RCA)
☐U/V Mixer
☐Car Cord

G-45.Other Features

☒Auto Head Cleaning
☒Auto Tracking
☐CH Auto Set-Up/Auto Clock
☒VIDEO PLUS+, SHOWVIEW, G-CODE
☒HQ (VHS Standard High Quality)
☒Auto Power On, Auto Play, Auto Rewind, Auto Eject,Auto Power Off
☒Premiere/ Canal+
☒Forward / Reverse Picture Search
☐One Touch Playback
☐CATV
☐Auto CH Memory
☐Just Clock Function
☐Kurupika Guide
☐Rental
☐Self-Seeking Modulator
☒Audio Dubbing

☒Index Search
☒Auto Search
☒ATS
☐PDC
☒VPS
☒Full OSD
☐SQPB
☐SAP
☐Channel Lock
☐Anti Theft
☐Hotel Lock
☐CM Skip
☐Game Position
☒Remote Control Code 1/2

G-46.Switch

Front

☒Power
☒Play
☐Pause/Still
☐System Select
☐One Touch Playback

☒Channel Up
☒F.FWD/Cue
☒Eject/Stop
☐Input Select

☒Channel Down
☒Rew/Rev
☒Rec/OTR
☐Output Select

Rear

☐RF-Converter Output Channel Selector(☐1 or 2CH ☐3 or 4CH)
☐TV/CATV Selector
☐SIF Selector

GENERAL SPECIFICATIONS

G-47.Remote Control Unit: RC-BM

Power Source: D.C 3 V Battery UM - 4 x 2

Glow in the Dark Remocon ☐ Yes ☒ No

Total 34 Key

- ☒ 0/AV
- ☒ 1
- ☒ 2
- ☒ 3
- ☒ 4
- ☒ 5
- ☒ 6
- ☒ 7
- ☒ 8
- ☒ 9
- ☐ 10
- ☐ 11
- ☐ 12
- ☐ /..
- ☒ Auto Tracking
- ☐ Jog/Shuttle
- ☐ Dial JOG
- ☐ Ring Shuttle
- ☐ One Touch Playback
- ☐ AD Skip
- ☒ Ch Up/Tr Up
- ☒ Ch Down/Tr Down
- ☐ Ch Skip
- ☒ Cancel/CH Skip
- ☒ Enter
- ☒ Speed
- ☒ Index
- ☐ Program
- ☒ Program/Video Plus
- ☐ Video Plus
- ☐ Set Up
- ☐ Set Down
- ☐ Set Right
- ☐ Set Left
- ☒ Call
- ☒ Menu
- ☒ TV/VCR
- ☒ Timer Rec
- ☐ Audio Dubbing
- ☒ Power
- ☒ Eject
- ☐ Play
- ☐ Play/Up
- ☒ Play/Slow/Up
- ☐ F.FWD
- ☒ F.FWD/Right
- ☐ Rew
- ☒ Rew/Left
- ☒ Pause/Still
- ☐ Pause
- ☐ Stop
- ☒ Stop/Down
- ☒ REC/OTR
- ☒ Clock/Counter
- ☒ Zero Return
- ☒ Counter Reset
- ☒ Audio Select

G-48.Hi-Fi Audio Recording System

Depth Multiplex Recording Rotary, Slant Azimuth Two Head Helical Scan System

G-49.Hi-Fi Audio Signal

Output Level Line -3.8 dB 1 Kohm(0dB=0.775Vrms)
S/N Ratio : More than 65 dB (Weighted)
Dynamic Range : More than 75 dB
Frequency Response : 20 Hz ~ 20 KHz(+-6dB)
Wow And Flutter : Less than 0.01 % Wrms
Channel Separation : More than 60 dB
Harmonic Distortion : Less than 1 %

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET, FRONT CABINET AND OPERATION PCB (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connector: (CP651).
4. Unlock the 7 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 5 screws ③ and remove the Operation PCB.

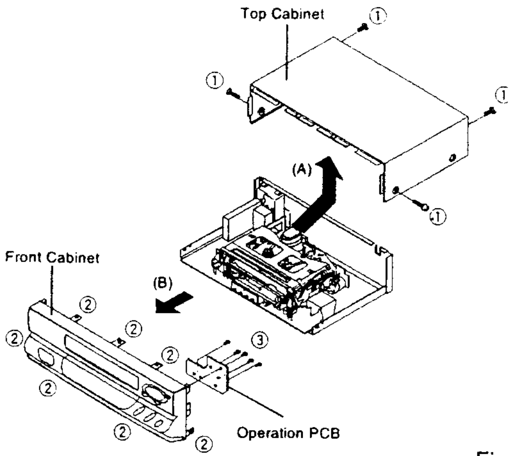

Top Cabinet
①
①
①
①
(A)
Front Cabinet
(B)
②
②
②
②
②
②
②
③
Operation PCB

Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

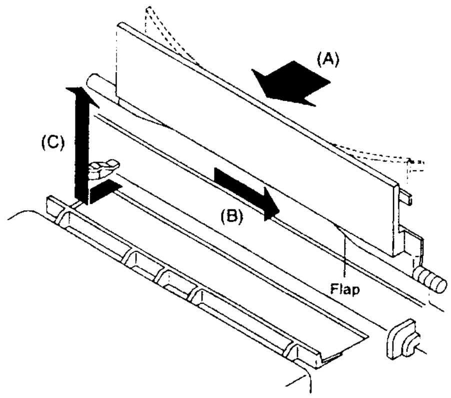


Fig. 1-2

1-3: DECK CHASSIS (Refer to Fig. 1-3)

1. Remove the 3 screws ①.
2. Remove the screw ②.
3. Disconnect the following connectors: (CP1001, CP1002, CP1003, CP1004, CP4001, CP4002 and CP4003).
4. Remove the Deck Chassis in the direction of arrow.

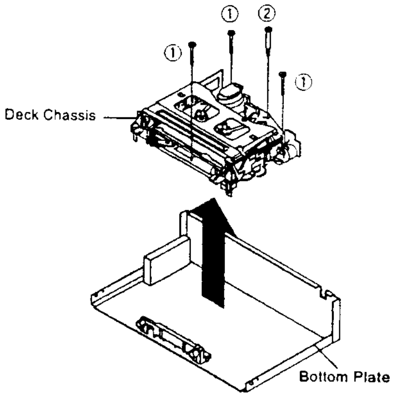

① ②
①
①
Deck Chassis
Bottom Plate

Fig. 1-3

1-4: SYSCON PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the 2 screws ②.
3. Remove the 2 screws ③.
4. Remove the Syscon PCB in the direction of arrow.

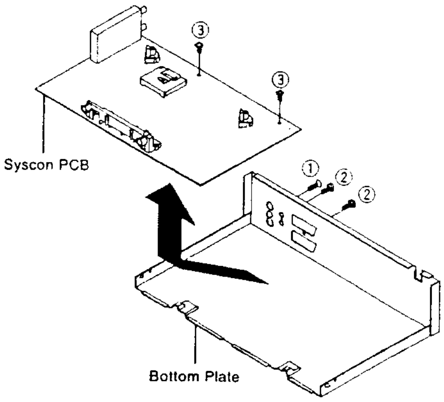

③
③
Syscon PCB
①
②
②
Bottom Plate

Fig. 1-4

DISASSEMBLY INSTRUCTIONS

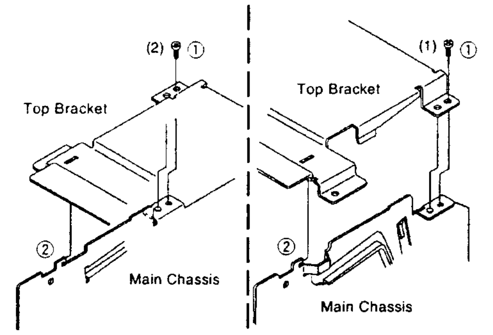
2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).


(2) ①
Top Bracket
②
Main Chassis
(1) ①
Top Bracket
②
Main Chassis

• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-1

2-2: DECK COVER/FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the support ① and remove the Deck Cover.
3. Remove the Polyslider Washer ②.
4. Remove the Flap Lever.
5. Unlock the 3 supports ③ and remove the Tape Guide R.

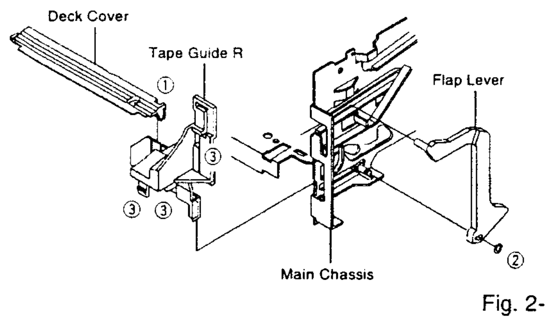
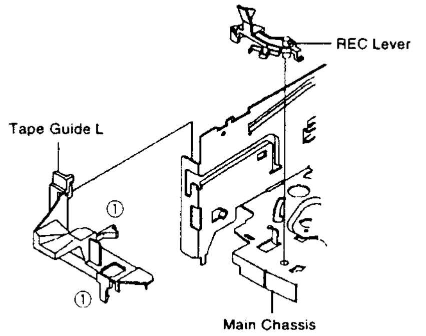

Deck Cover
Tape Guide R
①
③
③ ③
Flap Lever
Main Chassis
②

Fig. 2-2

2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

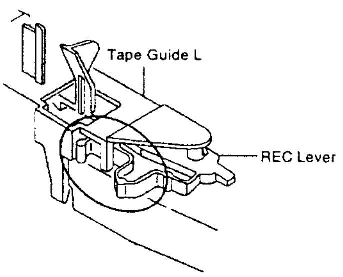

REC Lever
Tape Guide L
①
①
Main Chassis

• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-A

NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. **(Refer to Fig. 2-3-B)**


Tape Guide L
REC Lever

• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-B

2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

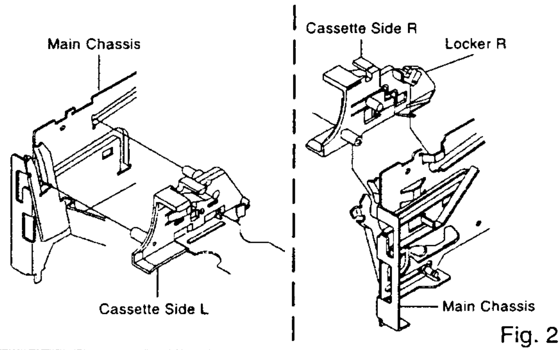

Main Chassis
Cassette Side L
Cassette Side R
Locker R
Main Chassis

Fig. 2-4

2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.

NOTE

When you install the Cassette Side L/R, be sure to move the Locker L/R after installing.

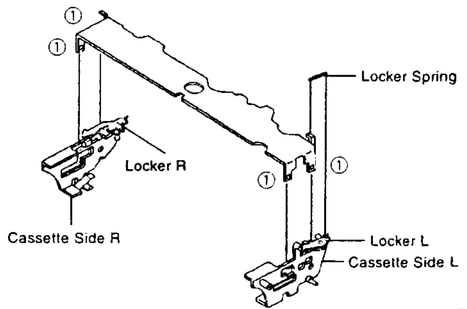

①
①
Locker Spring
Locker R
① ①
Cassette Side R
Locker L
Cassette Side L

Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LINK ASS'Y (Refer to Fig. 2-6)

1. Set the Link Ass'y to the Eject position.
2. Remove the (A) side of the Link Ass'y first, then remove the (B) side.

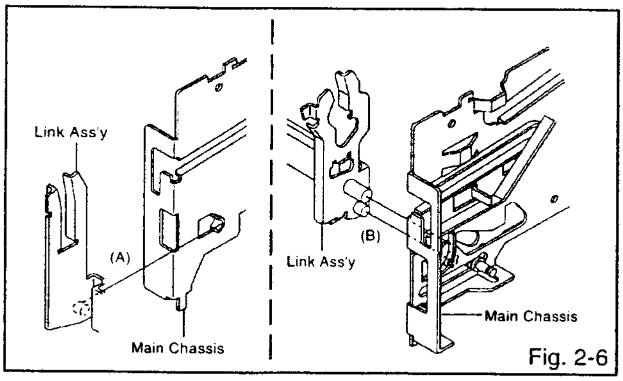
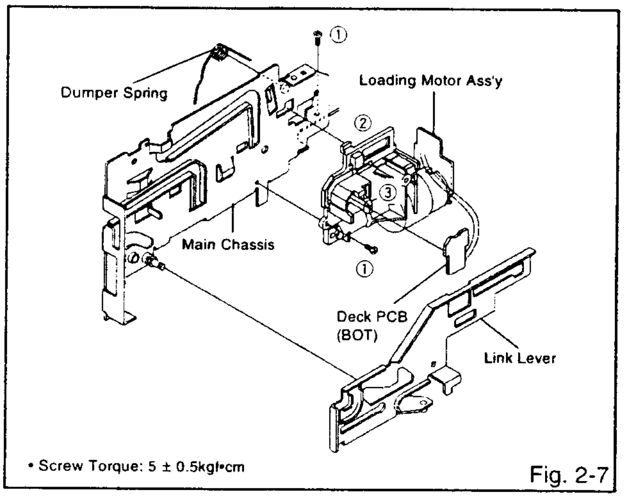

Link Ass'y
(A)
Main Chassis
(B)
Link Ass'y
Main Chassis

Fig. 2-6

2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the Dumper Spring.
3. Remove the 2 screws ①.
4. Unlock the support ② and remove the Loading Motor Ass'y.
5. Unlock the 2 supports ③ and remove the Deck PCB (BOT).


①
Dumper Spring
Loading Motor Ass'y
②
③
Main Chassis
①
Deck PCB
(BOT)
Link Lever

- Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-7

2-8: SENSOR COVER L (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L.
2. Unlock the 2 supports ② and remove the Deck PCB (EOT).

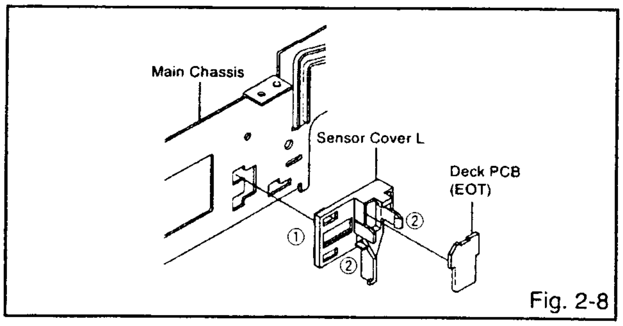

Main Chassis
Sensor Cover L
Deck PCB
(EOT)
②
①
②

Fig. 2-8

2-9: TENSION ASS'Y (Refer to Fig. 2-9-A)

1. Move the Inclined S Ass'y to the back side.
2. Remove the Tension Spring.
3. Unlock the support ① and remove the Tension Arm Ass'y.
4. Remove the Tension Adjust.
5. Unlock the 2 supports ② and remove the Tension Band Ass'y.
6. Unlock the support ③ and remove the Tension Holder.
7. Remove the SS Brake Spring.
8. Remove the SS Arm Brake.

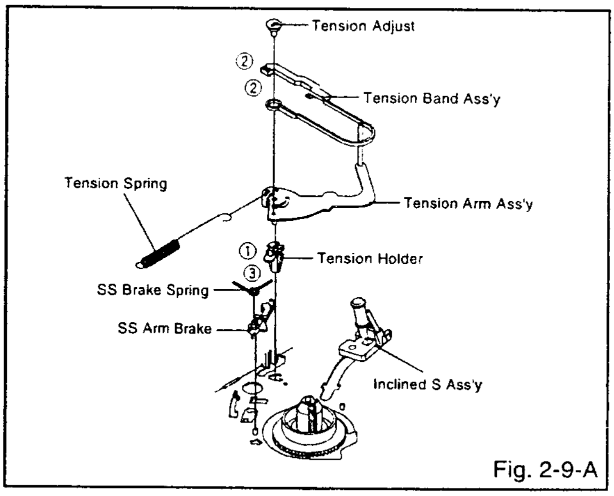

Tension Adjust
②
②
Tension Band Ass'y
Tension Spring
Tension Arm Ass'y
①
③
Tension Holder
SS Brake Spring
SS Arm Brake
Inclined S Ass'y

Fig. 2-9-A

NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-B. **(Refer to Fig. 2-9-B)**

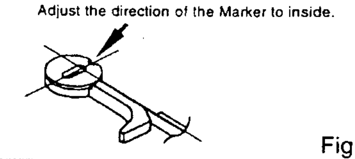

Adjust the direction of the Marker to inside.

Fig. 2-9-B

2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Remove the T Brake Ass'y.

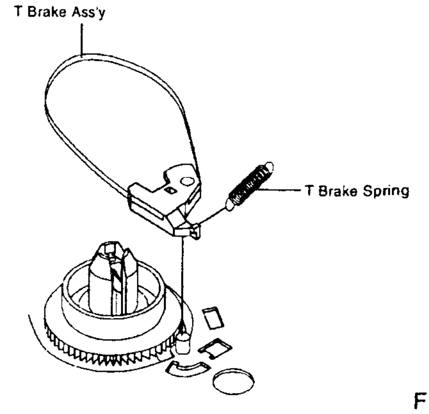

T Brake Ass'y
T Brake Spring

Fig. 2-10

DISASSEMBLY INSTRUCTIONS

2-11: S REEL/T REEL (Refer to Fig. 2-11)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-11)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it (FL OIL #6115). (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

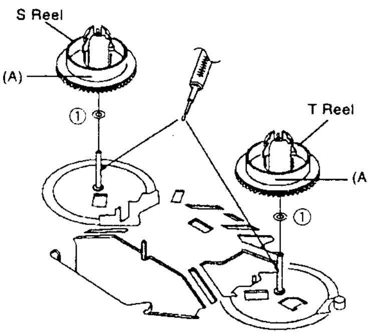
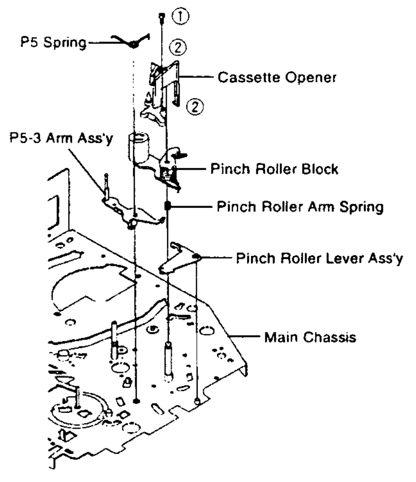

S Reel
(A)
①
T Reel
(A)
①

Fig. 2-11

2-12: PINCH ROLLER BLOCK/P5-3 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Block, Pinch Roller Arm Spring, Pinch Roller Lever Ass'y and P5-3 Arm Ass'y.


①
P5 Spring
②
Cassette Opener
②
P5-3 Arm Ass'y
Pinch Roller Block
Pinch Roller Arm Spring
Pinch Roller Lever Ass'y
Main Chassis

• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-12-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Block, install as shown in the circle of Fig. 2-12-B. **(Refer to Fig. 2-12-B)**

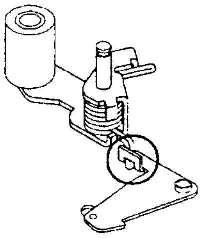


Fig. 2-12-B

2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. **(Refer to Fig. 2-13-B)**
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

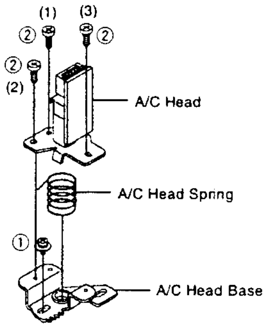

(1)
(3)
②
②
②
(2)
A/C Head
A/C Head Spring
①
A/C Head Base

Fig. 2-13-A

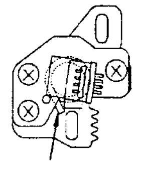
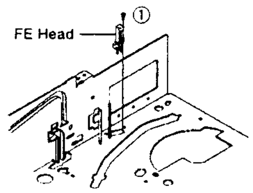

Spring Position

Fig. 2-13-B

2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.



• The FE Head is not installed on the Video Cassette Player.

Fig. 2-14

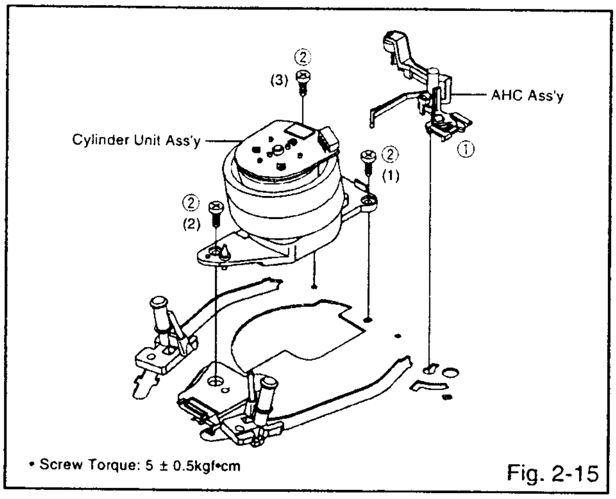
DISASSEMBLY INSTRUCTIONS

2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y
(Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



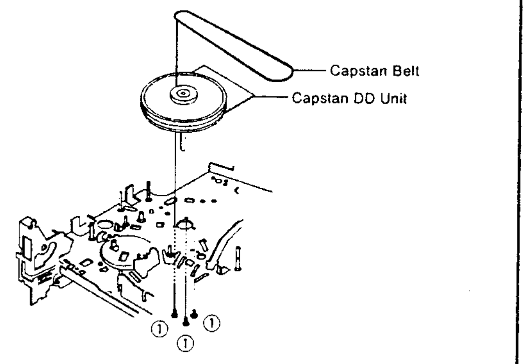
②
(3)
AHC Ass'y
Cylinder Unit Ass'y
②
(1)
①
②
(2)

• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-15

2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



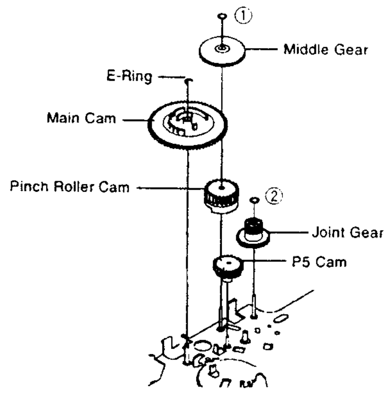
Capstan Belt
Capstan DD Unit
①
①
①

• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-16

2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, P5 Cam and Pinch Roller Cam.
3. Remove the Polyslider Washer ②, then remove the Joint Gear.

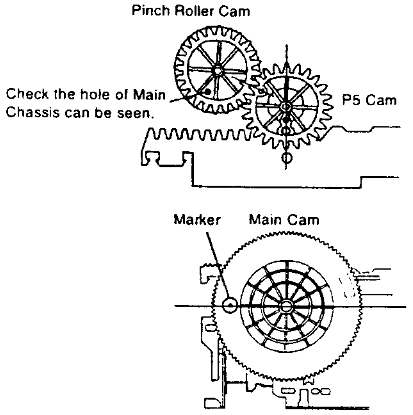


①
Middle Gear
E-Ring
Main Cam
Pinch Roller Cam
②
Joint Gear
P5 Cam

Fig. 2-17-A

NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. **(Refer to Fig. 2-17-B)**

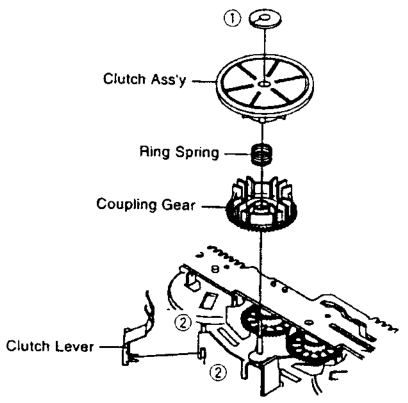


Pinch Roller Cam
Check the hole of Main Chassis can be seen.
P5 Cam
Marker
Main Cam

Fig. 2-17-B

2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y, Ring Spring and Coupling Gear.
3. Unlock the 2 supports ② and remove the Clutch Lever.



①
Clutch Ass'y
Ring Spring
Coupling Gear
②
Clutch Lever
②

Fig. 2-18

DISASSEMBLY INSTRUCTIONS

2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Capstan Brake Spring.
3. Slide the Main Rod and remove the Capstan Brake Ass'y.
4. Remove the Main Rod, Tension Lever, Clutch Actuator, Idler Arm Ass'y.
5. Remove the screw ② and washer ③.
6. Remove the LED Reflecter.
7. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
8. Remove the Loading Gear S and Loading Gear T.
9. Remove the Loading Gear Spring.

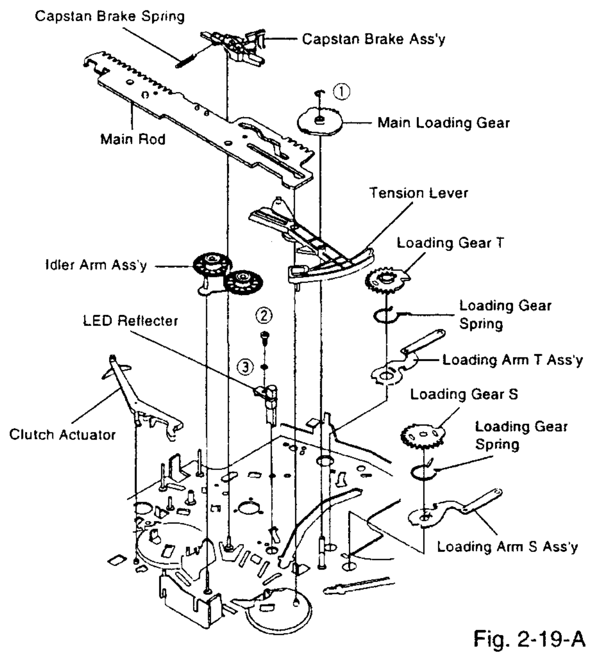

Capstan Brake Spring
Capstan Brake Ass'y
①
Main Loading Gear
Main Rod
Tension Lever
Loading Gear T
Idler Arm Ass'y
Loading Gear Spring
LED Reflecter
②
③
Loading Arm T Ass'y
Loading Gear S
Clutch Actuator
Loading Gear Spring
Loading Arm S Ass'y

Fig. 2-19-A

NOTES

1. When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. **(Refer to Fig. 2-19-B)**

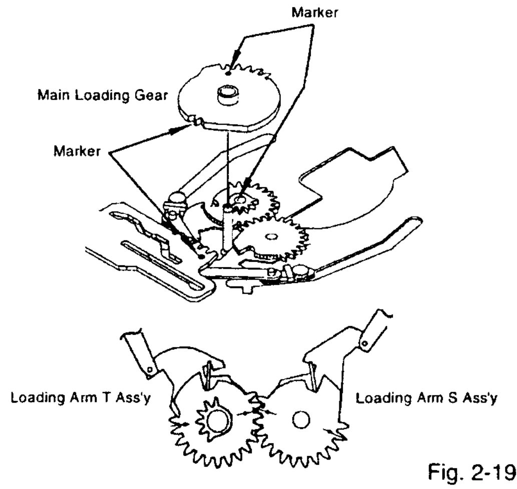

Marker
Main Loading Gear
Marker
Loading Arm T Ass'y
Loading Arm S Ass'y

Fig. 2-19-B

2. When you install the Clutch Actuator, install as shown in the circle of Fig. 2-19-C. **(Refer to Fig. 2-19-C)**

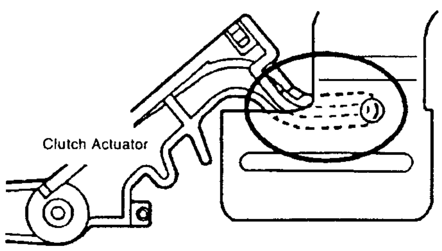

Clutch Actuator

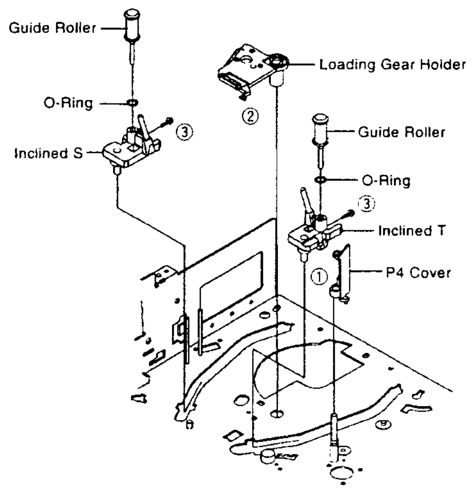
Fig. 2-19-C

2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Unlock the support ① and remove the P4 Cover.
2. Unlock the support ② and remove the Loading Gear Holder.
3. Remove the Inclined S.
4. Remove the Inclined T.
5. Remove the 2 screws ③, then remove the Guide Roller and O-Ring.

NOTE

Do not touch the roller of Guide Roller.


Guide Roller
Loading Gear Holder
O-Ring
②
③
Guide Roller
Inclined S
O-Ring
③
Inclined T
①
P4 Cover

• Screw Torque: 0.7 ± 0.2kgf•cm

Fig. 2-20

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	: Synchronization
	SYNC SEP	: Sync Separator, Separation
T	**TR**	: Transistor
	TRAC	: Tracking
	TRICK PB	: Trick Playback
	TP	: Test Point
U	**UNREG**	: Unregulated
V	**V**	: Volt
	VCO	: Voltage Controlled Oscillator
	VIF	: Video Intermediate Frequency
	VP	: Vertical Pulse, Voltage Display
	V.PB	: Video Playback
	VR	: Variable Resistor
	V.REC	: Video Recording
	VSF	: Visual Search Fast Forward
	VSR	: Visual Search Rewind
	VSS	: Voltage Super Source
	V-SYNC	: Vertical-Synchronization
	VT	: Voltage Tuning
X	**X'TAL**	: Crystal
Y	**Y/C**	: Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

Method	Operations
Press both PLAY button and CH UP button on the set for more than 2 seconds.	Initialization of the factory. NOTE: Do not use this for the normal servicing.
While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds.	PLAY/REC total hours are displayed on the FIP. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
While pressing the CH UP button on the set, press the STOP button on the set for more than 2 seconds during PLAY.	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

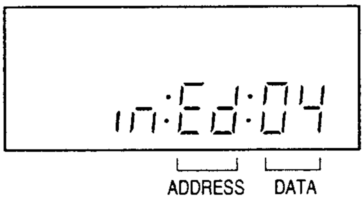
Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

■ : Clean
● : Replace

CONFIRMATION OF USING HOURS

PLAY/REC total hours can be checked on the FIP.
Total hours are displayed in 16 system of notation.

1. While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds.
2. Adjust the ADDRESS to "FD" by SET +/- button and read the DATA.
   (This DATA becomes the thousands digit and hundreds digit value of the following formula.)
3. Adjust the ADDRESS to "FE" by SET +/- button and read the DATA.
   (This DATA becomes the tens digit and ones digit value of the following formula.)
4. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

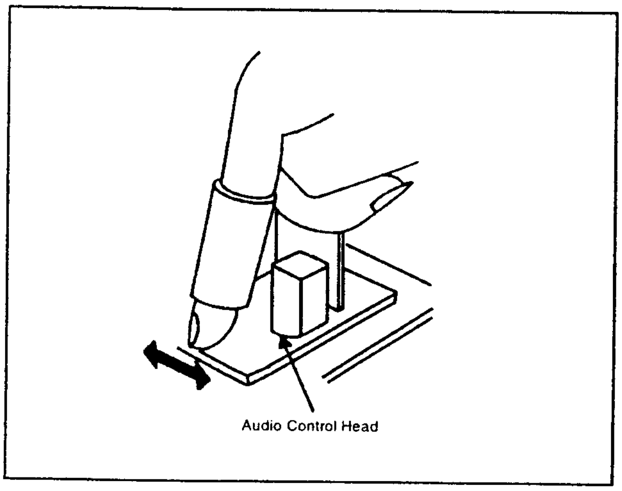
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

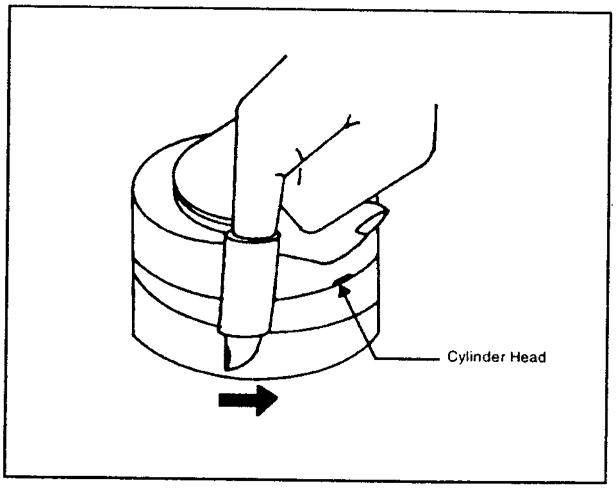
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
C2	00	CC	21	D6	00	E0	76	EA	00	F4	41
C3	00	CD	15	D7	00	E1	5E	EB	5F	F5	00
C4	00	CE	0A	D8	F1	E2	08	EC	09	F6	00
C5	F1	CF	8A	D9	9F	E3	F0	ED	F0	F7	00
C6	44	D0	AA	DA	82	E4	01	EE	0A	F8	00
C7	51	D1	E2	DB	0A	E5	F3	EF	F3	F9	00
C8	00	D2	06	DC	42	E6	00	F0	00	FA	04
C9	51	D3	02	DD	35	E7	00	F1	2F	FB	00
CA	6C	D4	09	DE	A3	E8	00	F2	DF	FC	99
CB	2B	D5	03	DF	56	E9	00	F3	41		

Table 1

1. Turn on the POWER.
2. While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds.
3. ADDRESS and DATA should appear FIG 1.

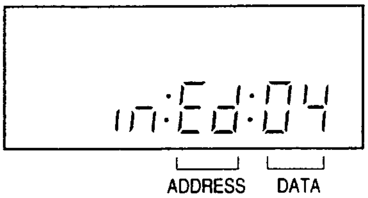
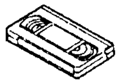
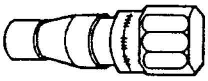
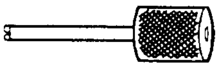
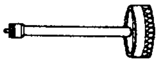
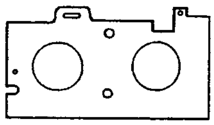
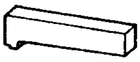
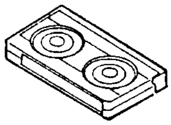
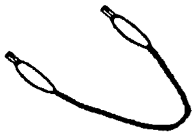
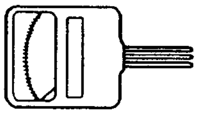


Fig. 1

4. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will "blink".
6. Again, step through the DATA using SET + or - until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (VP$_1$S-LI6^3) JG001F (VP$_1$S-CO1^3) JG001R (VP$_1$S-LI6^{3}H) JG001U (VP$_1$S-X6^3) 	**(For 2 head 2 speed model)** VHS Alignment Tape JG001C (VP$_2$S-LI6^3) JG001D (VP$_2$S-CO1^3) JG001V (VP$_2$S-X6^3) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
JG154 Cable 	Tentelometer 		

Part No.	Remarks
JG001E	Monoscope, 6KHz **(For 2 head 1 speed model, 4 head model)**
JG001F	Color Bar, 1KHz **(For 2 head 1 speed model, 4 head model)**
JG001R	Hi-Fi Audio **(For Hi-Fi model)**
JG001U	X Value Adjustment **(For 2 head 1 speed model, 4 head model)**
JG001C	Monoscope, 6KHz **(For 2 head 2 speed model)**
JG001D	Color Bar, 1KHz **(For 2 head 2 speed model)**
JG001V	X Value Adjustment **(For 2 head 2 speed model)**
JG002B	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	Brake Torque (T Reel Ass'y)
JG002F	VSR Torque, Brake Torque (S Reel)
JG005	Guide Roller Adjustment
JG153	X Value Adjustment
JG022/JG024A	Reel Disk Height Adjustment
JG100A	Playback Torque, Back Tension Torque During Playback
JG154	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP1001** and **TP1002** with the cable JG154.
   (Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)
   The EOT, BOT and Reel Sensor do not work at this moment.
   At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **TP1002**. **(Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)** In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that "A" of the reel disk is lower than "B" of the reel disk height adjustment jig **(JG024A)**, and is higher than "C". If it is not enough height, adjust to 10(+0.2, -0) mm with the height adjustment washer.
4. Adjust the other reel in the same way.

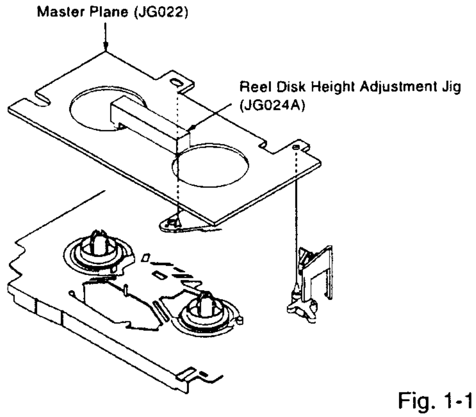

Master Plane (JG022)
Reel Disk Height Adjustment Jig (JG024A)

Fig. 1-1-A

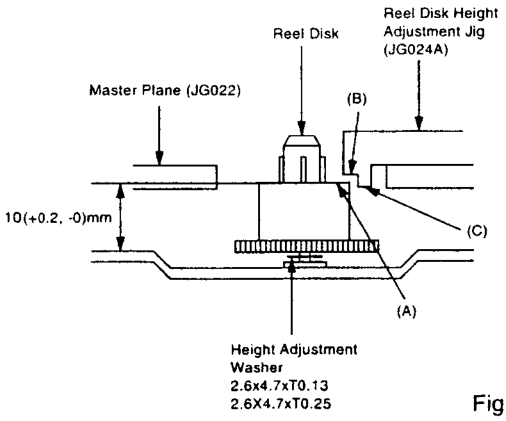

Reel Disk Height Adjustment Jig (JG024A)
Reel Disk
Master Plane (JG022)
(B)
10(+0.2, -0)mm
(C)
(A)
Height Adjustment Washer
2.6x4.7xT0.13
2.6X4.7xT0.25

Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis.
   After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B**. If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

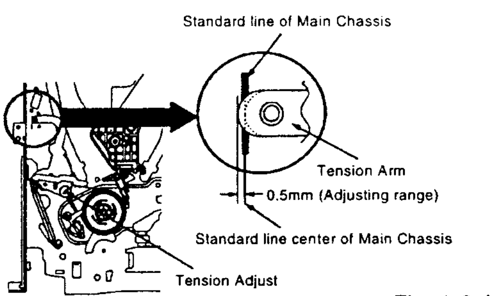

Standard line of Main Chassis
Tension Arm
0.5mm (Adjusting range)
Standard line center of Main Chassis
Tension Adjust

Fig. 1-2-A

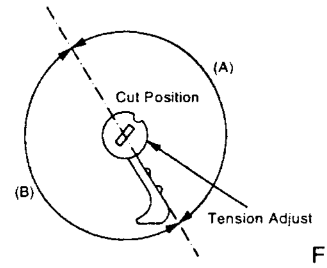

(A)
Cut Position
(B)
Tension Adjust

Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

- USING A CASSETTE TYPE TORQUE TAPE **(JG100A)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 60~110gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

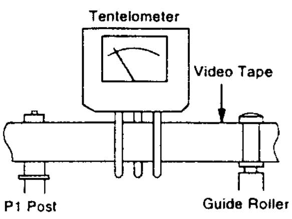

Tentelometer
Video Tape
P1 Post
Guide Roller

Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Operate within 4~5 seconds after the reel disk begins to turn.
2. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Rewind mode. **(Refer to Fig.1-4)**
3. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 45~70gf•cm.

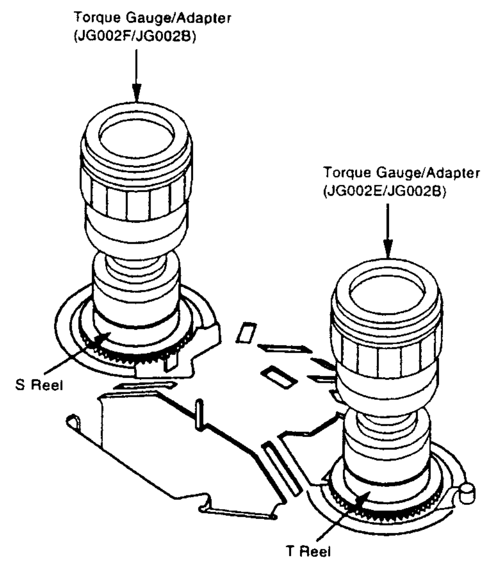


Fig. 1-4

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	T Brake Spring/Tension Spring

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Connect CH-1 of the oscilloscope to **TP4002 (Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Adjusting Driver **(JG005)** slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

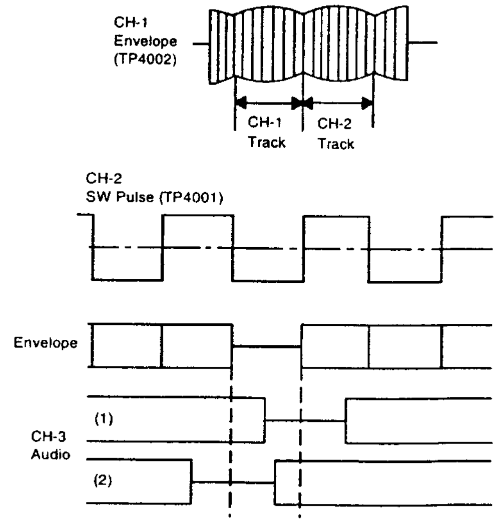


Fig. 2-1-A

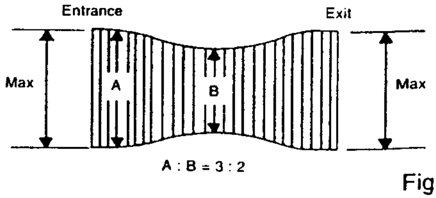


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape **(JG001C or JG001E). (Refer to SERVICING FIXTURE AND TOOLS)**
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

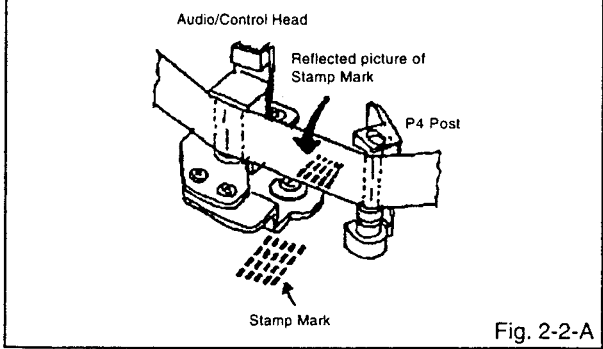


Fig. 2-2-A

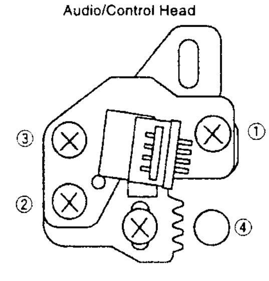


Fig. 2-2-B

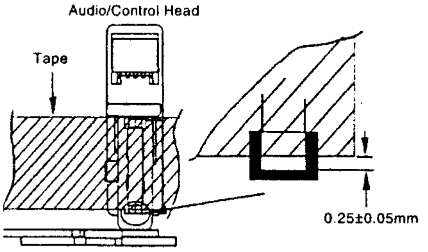


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

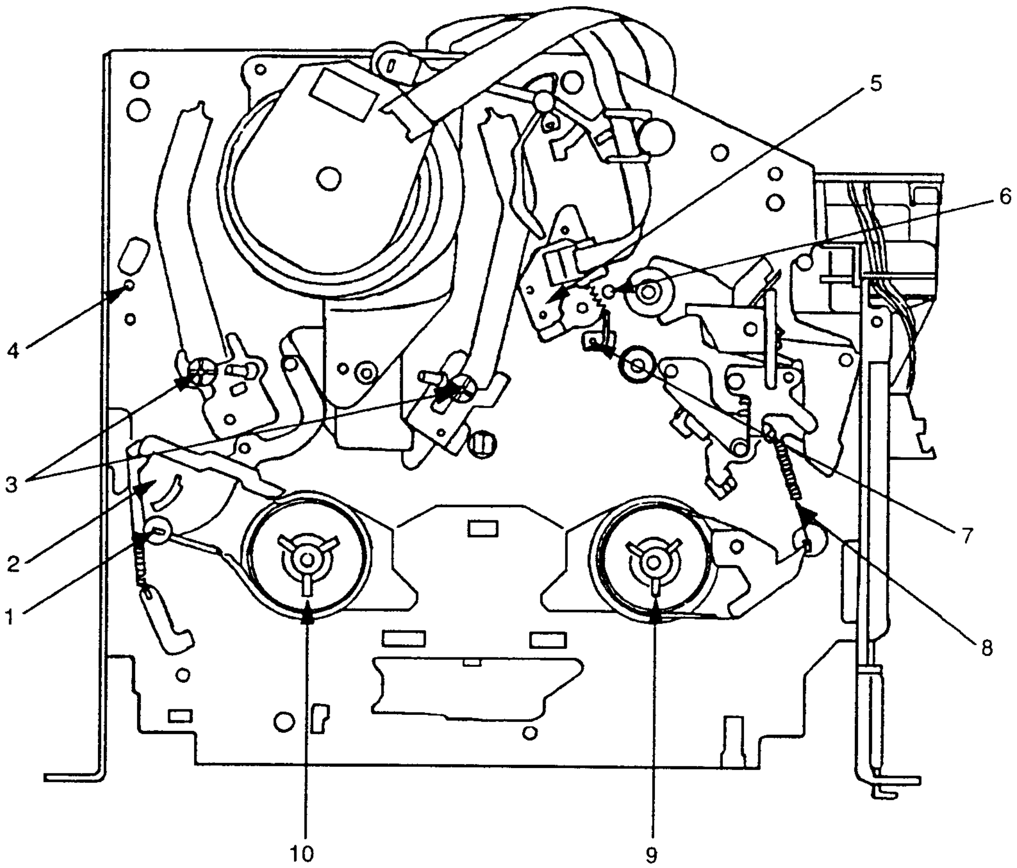
1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape **(JG001U or JG001V). (Refer to SERVICING FIXTURE AND TOOLS)**
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-1-A**.

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to the **Hi-Fi Audio Out Jack**.
2. Playback the VHS Alignment Tape **(JG001R). (Refer to SERVICING FIXTURE AND TOOLS)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
6. Confirm that the difference between these counted steps number in the above items are within 2 steps. If the difference are more than 3 steps, do Tape Running Adjustment again. **(Refer to item 2-3)**

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Adjust
2. Tension Arm
3. Guide Roller
4. P1 Post
5. Audio/Control Head
6. X value adjustment driver hole
7. P4 Post
8. T Brake Spring
9. T Reel
10. S Reel

ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When replacing IC's or transistors, use only specified silicon grease **(YG6260M)**.
(To prevent the damage to IC's and transistors.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape **(JG001E)**

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **pin 19 of J4501**.
2. Playback the alignment tape. **(JG001E)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. While pressing the CH UP button on the set, press the STOP button on the set for more than 2 seconds. If the indicator ATR disappear's, the adjustment is finished. **(Refer to Fig. 1-1-A, B)**

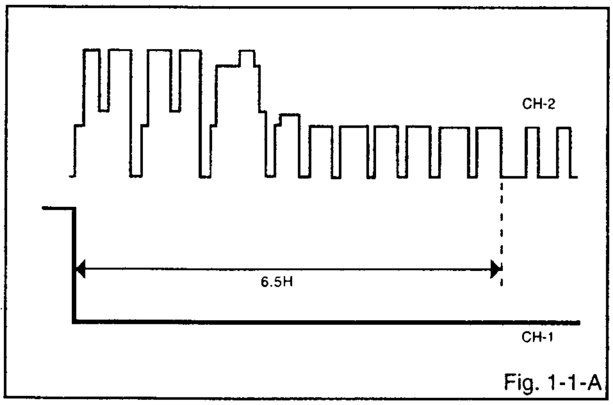


Fig. 1-1-A

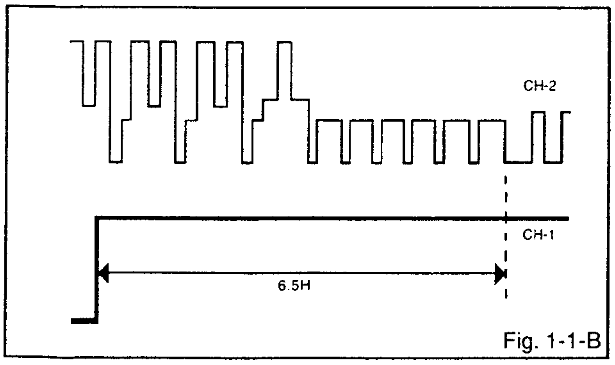


Fig. 1-1-B

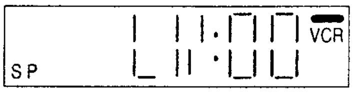
1-2: SEPARATION

CONDITIONS

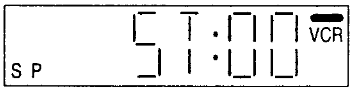
MODE-STOP
AUDIO OUTPUT SW: STEREO POSITION
Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: No Signal, R ch: 1KHz).
2. Connect the AC voltmeter to **AUDIO OUT (L ch)**.
3. Press both CH UP button and STOP button on the set for more than 3 seconds.
   The fluorescent display on the set displays as below.



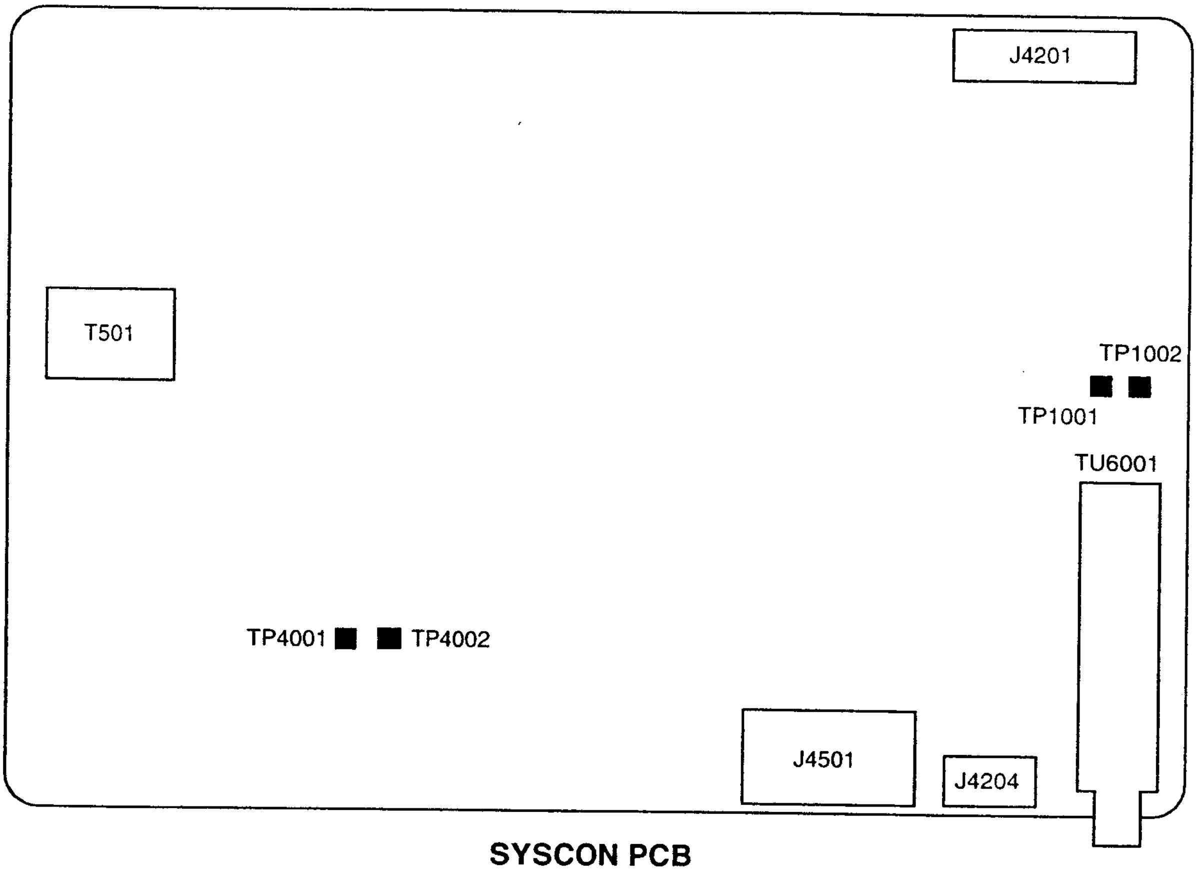
4. Press the F.FWD or REW button on the remote control.
   The fluorescent display on the set displays as below.



5. Adjust the F.FWD and REW button on the remote control until output signal is minimum. (more than 25dB)
6. Press both CH UP button and STOP button of the set together to complete the adjustment.
7. Receive the audio signal (L ch: 1KHz, R ch: No Signal).
8. Connect the AC voltmeter to **AUDIO OUT (R ch)**.
9. Repeat steps 3~6.

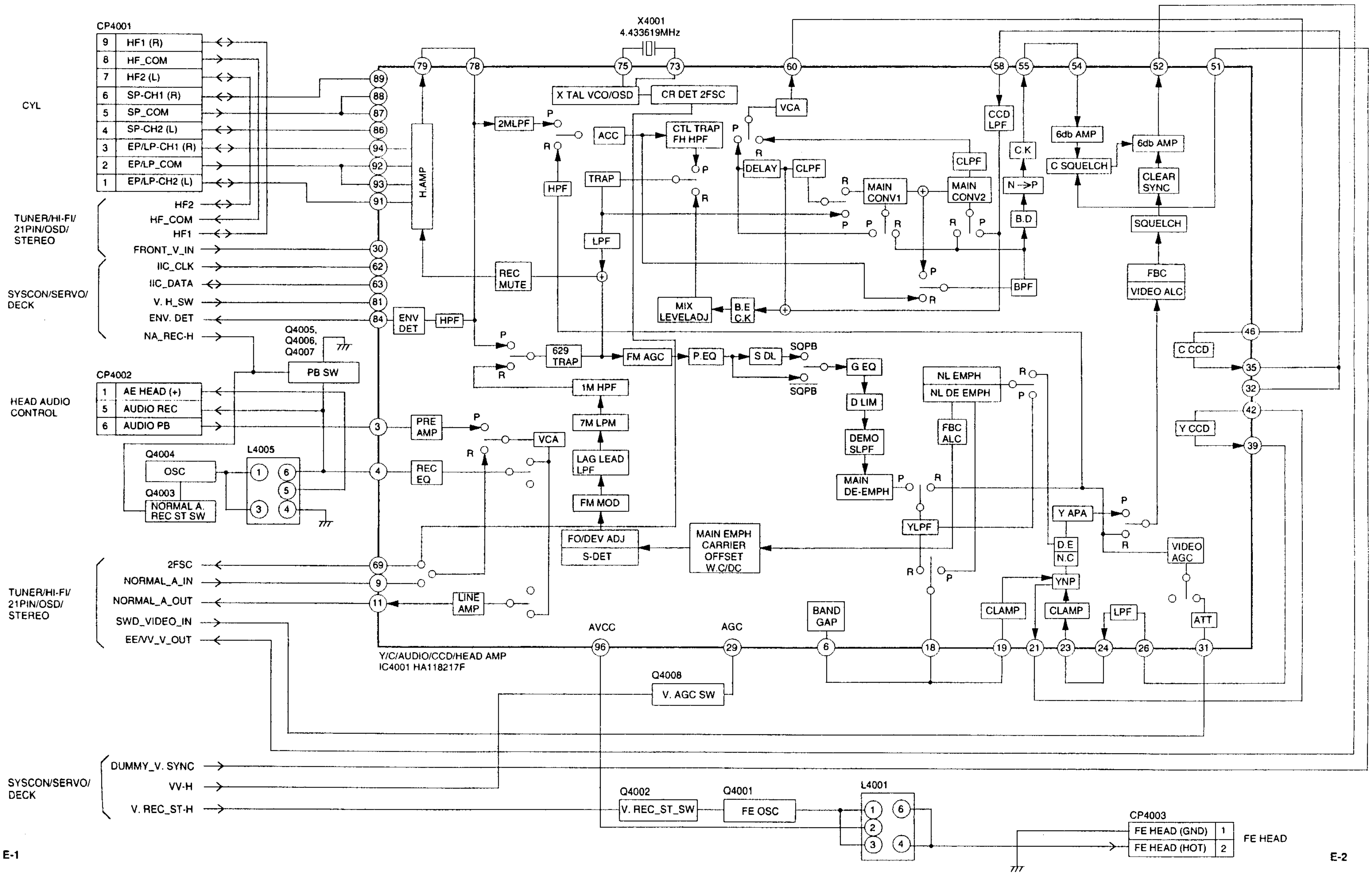
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE


J4201
T501
TP1002
TP1001
TU6001
TP4001
TP4002
J4501
J4204

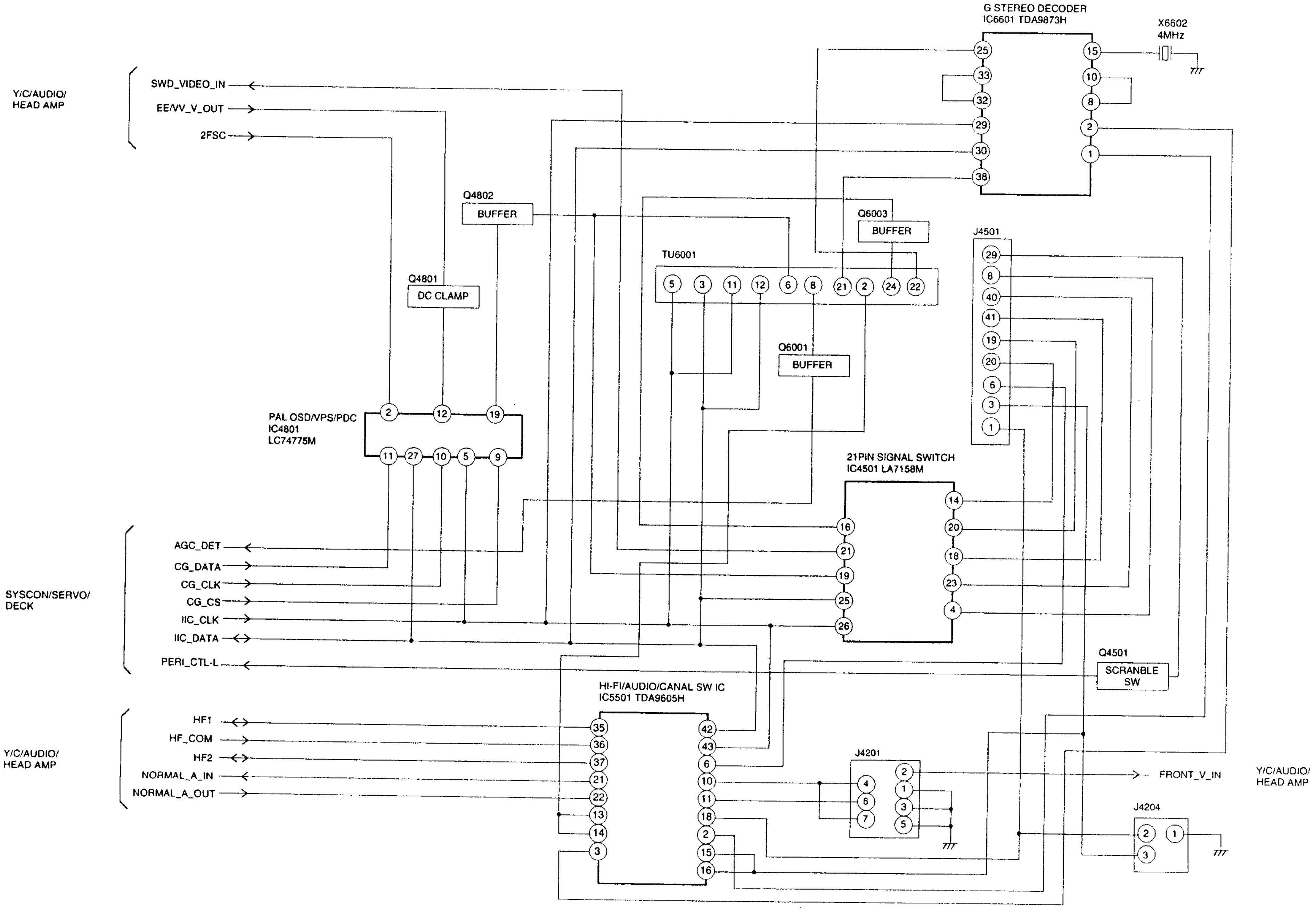
SYSCON PCB

Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM

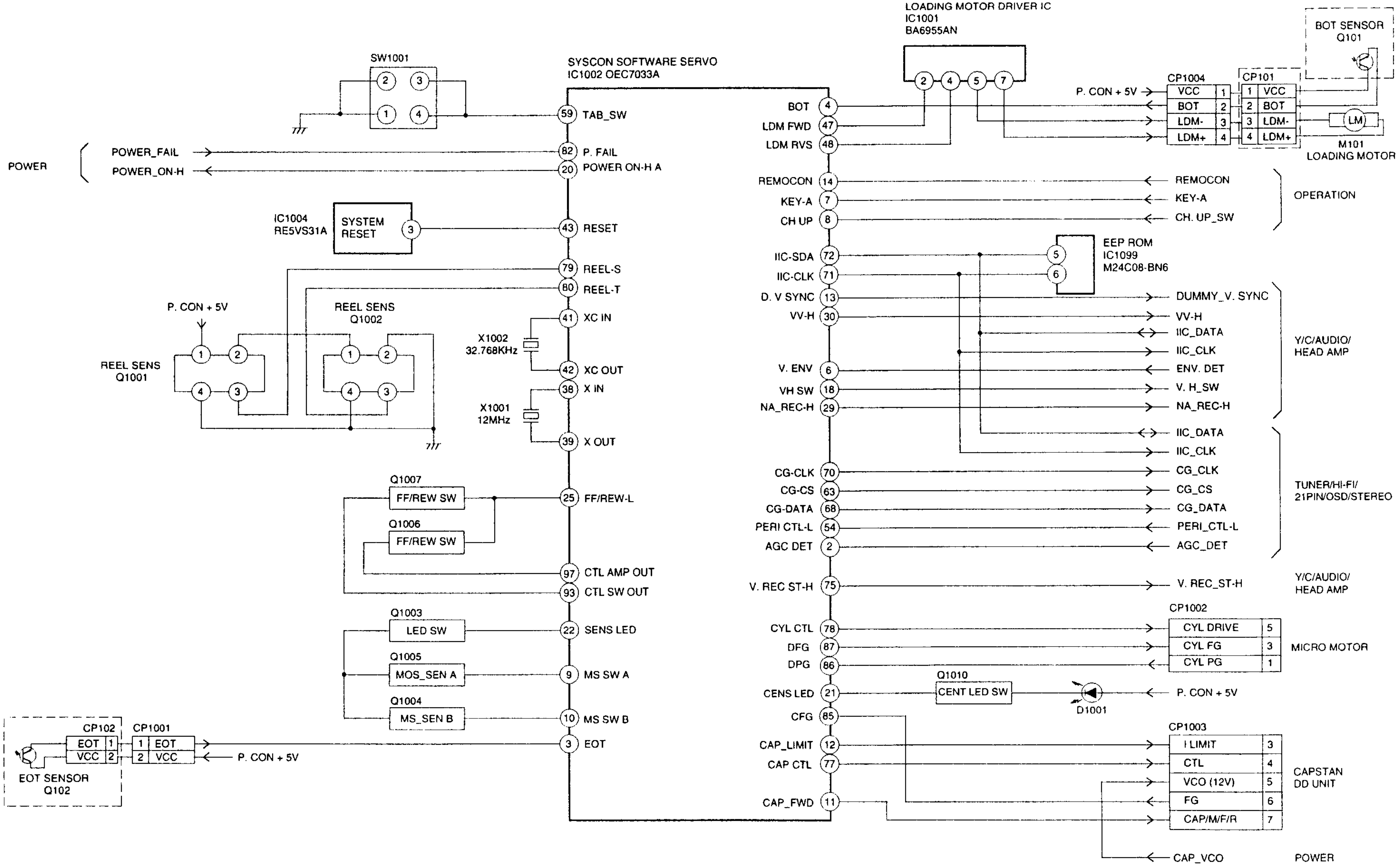


CP4001
9 HF1 (R)
8 HF_COM
7 HF2 (L)
6 SP-CH1 (R)
5 SP_COM
4 SP-CH2 (L)
3 EP/LP-CH1 (R)
2 EP/LP_COM
1 EP/LP-CH2 (L)
CYL
TUNER/HI-FI/ 21PIN/OSD/ STEREO
HF2
HF_COM
HF1
FRONT_V_IN
SYSCON/SERVO/ DECK
IIC_CLK
IIC_DATA
V. H_SW
ENV. DET
NA_REC-H
Q4005, Q4006, Q4007
PB SW
CP4002
1 AE HEAD (+)
5 AUDIO REC
6 AUDIO PB
HEAD AUDIO CONTROL
Q4004
OSC
L4005
Q4003
NORMAL A. REC ST SW
TUNER/HI-FI/ 21PIN/OSD/ STEREO
2FSC
NORMAL_A_IN
NORMAL_A_OUT
SWD_VIDEO_IN
EE/VV_V_OUT
SYSCON/SERVO/ DECK
DUMMY_V. SYNC
VV-H
V. REC_ST-H
X4001
4.433619MHz
H.AMP
2MLPF
HPF
REC MUTE
ENV DET
HPF
629 TRAP
1M HPF
7M LPM
LAG LEAD LPF
FM MOD
FO/DEV ADJ
S-DET
PRE AMP
VCA
REC EQ
LINE AMP
X TAL VCO/OSD
CR DET 2FSC
ACC
CTL TRAP FH HPF
TRAP
LPF
FM AGC
MIX LEVELADJ
B.E C.K
P.EQ
S DL
SQPB
SQPB
G EQ
D LIM
DEMO SLPF
MAIN DE-EMPH
MAIN EMPH CARRIER OFFSET W.C/DC
VCA
DELAY
CLPF
MAIN CONV1
MAIN CONV2
CLPF
BPF
CCD LPF
C K
N→P
B.D
6db AMP
C SQUELCH
6db AMP
CLEAR SYNC
SQUELCH
FBC
VIDEO ALC
NL EMPH
NL DE EMPH
FBC ALC
YLPF
Y APA
D.E
N.C
YNP
CLAMP
CLAMP
LPF
VIDEO AGC
ATT
BAND GAP
C CCD
Y CCD
AVCC
AGC
Y/C/AUDIO/CCD/HEAD AMP
IC4001 HA118217F
Q4008
V. AGC SW
Q4002
V. REC_ST_SW
Q4001
FE OSC
L4001
CP4003
FE HEAD (GND) 1
FE HEAD (HOT) 2
FE HEAD
P
R

TUNER/HI-FI/21PIN/OSD/STEREO BLOCK DIAGRAM

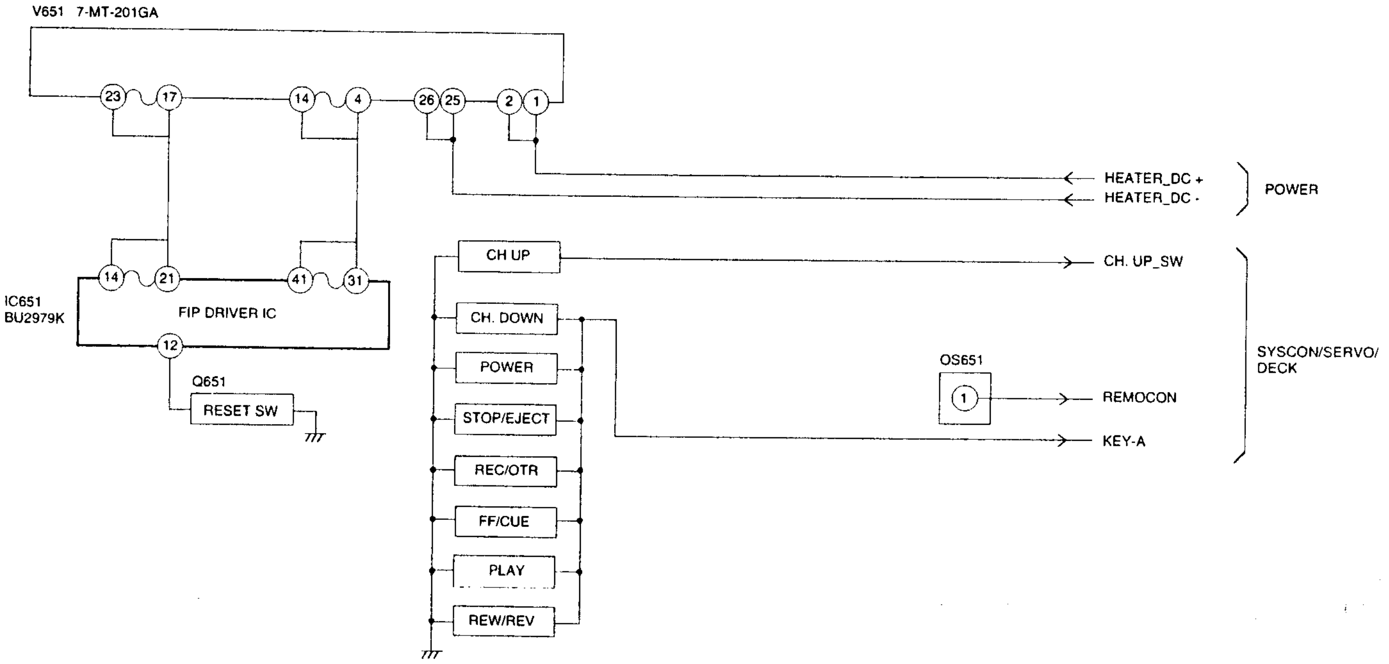

G STEREO DECODER
IC6601 TDA9873H
X6602
4MHz
Y/C/AUDIO/
HEAD AMP
SWD_VIDEO_IN
EE/VV_V_OUT
2FSC
Q4802
BUFFER
Q6003
BUFFER
J4501
TU6001
Q4801
DC CLAMP
Q6001
BUFFER
PAL OSD/VPS/PDC
IC4801
LC74775M
21PIN SIGNAL SWITCH
IC4501 LA7158M
SYSCON/SERVO/
DECK
AGC_DET
CG_DATA
CG_CLK
CG_CS
IIC_CLK
IIC_DATA
PERI_CTL-L
Q4501
SCRANBLE
SW
HI-FI/AUDIO/CANAL SW IC
IC5501 TDA9605H
Y/C/AUDIO/
HEAD AMP
HF1
HF_COM
HF2
NORMAL_A_IN
NORMAL_A_OUT
J4201
FRONT_V_IN
Y/C/AUDIO/
HEAD AMP
J4204

SYSTEM CONTROL/SERVO/DECK BLOCK DIAGRAM

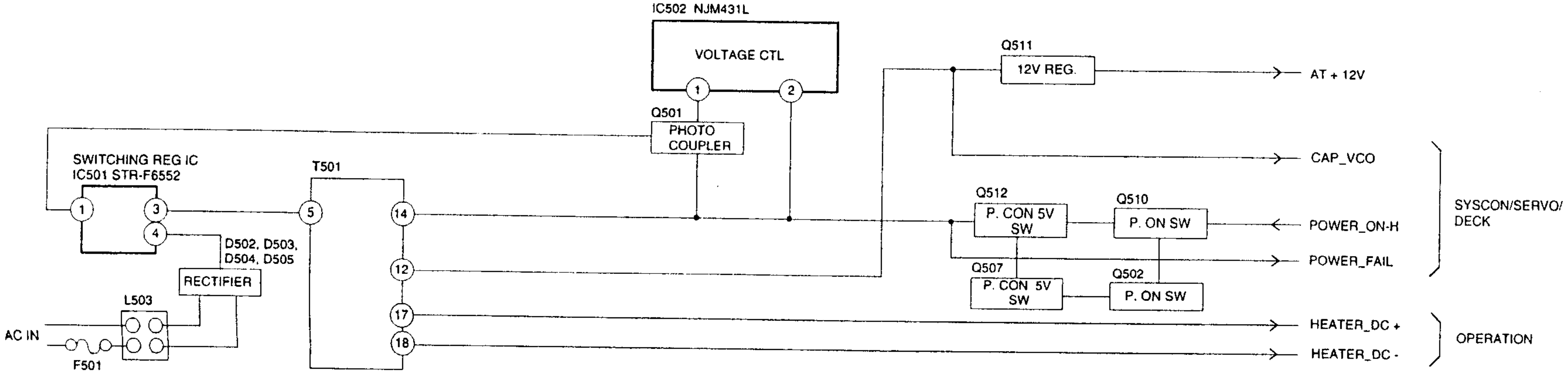


SW1001
SYSCON SOFTWARE SERVO
IC1002 OEC7033A
LOADING MOTOR DRIVER IC
IC1001
BA6955AN
BOT SENSOR
Q101
P. CON + 5V
CP1004
VCC
BOT
LDM-
LDM+
CP101
VCC
BOT
LDM-
LDM+
LM
M101
LOADING MOTOR
TAB_SW
POWER
POWER_FAIL
POWER_ON-H
P. FAIL
POWER ON-H A
BOT
LDM FWD
LDM RVS
REMOCON
KEY-A
CH UP
REMOCON
KEY-A
CH. UP_SW
OPERATION
IC1004
RE5VS31A
SYSTEM
RESET
RESET
EEP ROM
IC1099
M24C08-BN6
IIC-SDA
IIC-CLK
REEL-S
REEL-T
D. V SYNC
VV-H
DUMMY_V. SYNC
VV-H
IIC_DATA
IIC_CLK
Y/C/AUDIO/
HEAD AMP
P. CON + 5V
REEL SENS
Q1002
REEL SENS
Q1001
XC IN
X1002
32.768KHz
XC OUT
X IN
X1001
12MHz
X OUT
V. ENV
VH SW
NA_REC-H
ENV. DET
V. H_SW
NA_REC-H
IIC_DATA
IIC_CLK
Q1007
FF/REW SW
Q1006
FF/REW SW
FF/REW-L
CG-CLK
CG-CS
CG-DATA
PERI CTL-L
AGC DET
CG_CLK
CG_CS
CG_DATA
PERI_CTL-L
AGC_DET
TUNER/HI-FI/
21PIN/OSD/STEREO
CTL AMP OUT
CTL SW OUT
V. REC ST-H
V. REC_ST-H
Y/C/AUDIO/
HEAD AMP
Q1003
LED SW
SENS LED
CP1002
CYL CTL
DFG
DPG
CYL DRIVE
CYL FG
CYL PG
MICRO MOTOR
Q1005
MOS_SEN A
MS SW A
Q1010
CENS LED
CENT LED SW
D1001
P. CON + 5V
Q1004
MS_SEN B
MS SW B
CFG
CP102
CP1001
EOT
VCC
EOT
VCC
EOT
P. CON + 5V
EOT SENSOR
Q102
CP1003
CAP_LIMIT
CAP CTL
CAP_FWD
I LIMIT
CTL
VCO (12V)
FG
CAP/M/F/R
CAPSTAN
DD UNIT
CAP_VCO
POWER

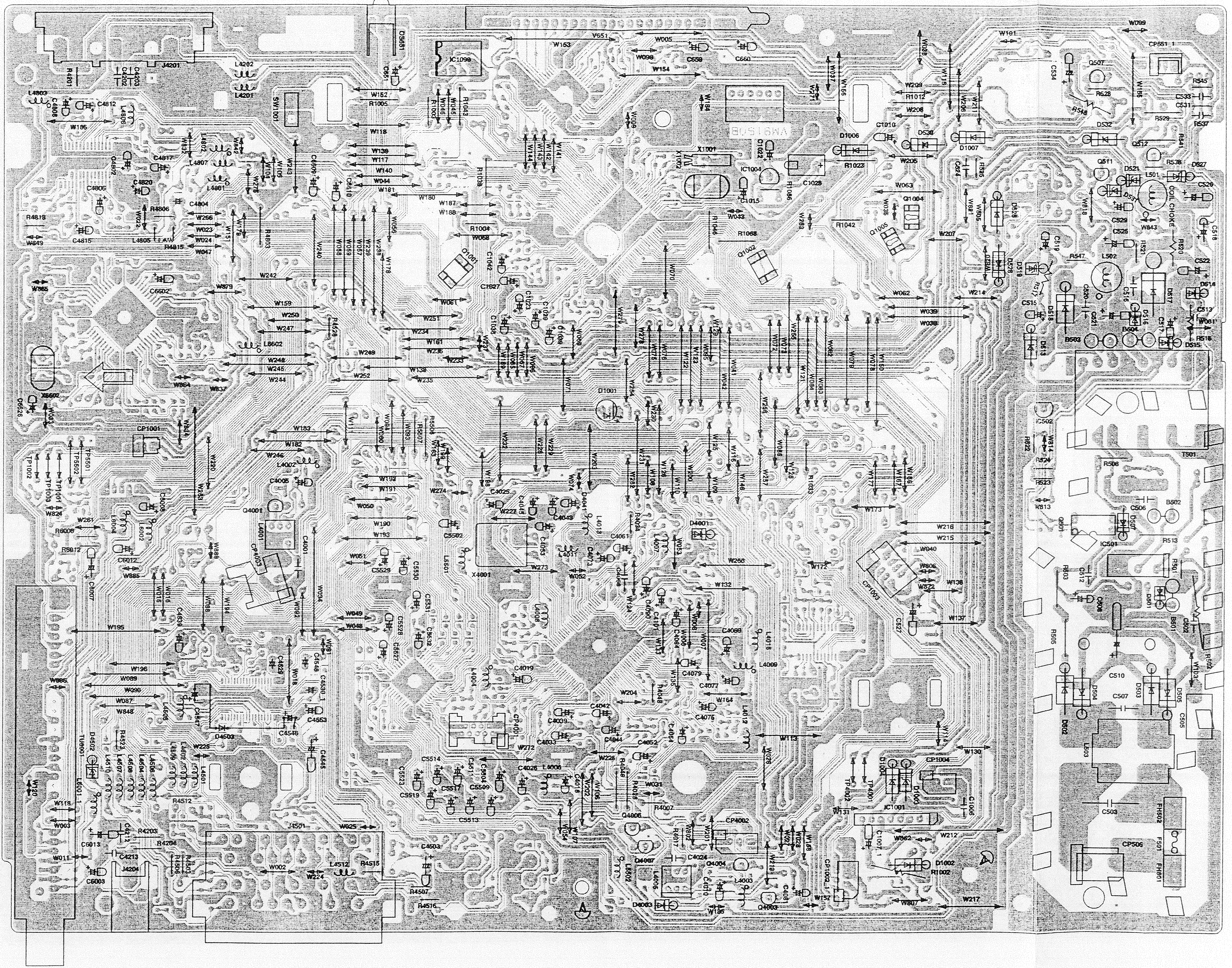
OPERATION BLOCK DIAGRAM


V651 7-MT-201GA
23
17
14
4
26
25
2
1
HEATER_DC +
HEATER_DC -
POWER
IC651
BU2979K
14
21
41
31
FIP DRIVER IC
12
Q651
RESET SW
CH UP
CH. DOWN
POWER
STOP/EJECT
REC/OTR
FF/CUE
PLAY
REW/REV
CH. UP_SW
OS651
1
REMOCON
KEY-A
SYSCON/SERVO/
DECK

POWER BLOCK DIAGRAM


IC502 NJM431L
VOLTAGE CTL
1
2
Q501
PHOTO
COUPLER
SWITCHING REG IC
IC501 STR-F6552
1
3
4
T501
5
14
12
17
18
D502, D503,
D504, D505
RECTIFIER
L503
AC IN
F501
Q511
12V REG.
AT + 12V
CAP_VCO
Q512
P. CON 5V
SW
Q510
P. ON SW
POWER_ON-H
POWER_FAIL
Q507
P. CON 5V
SW
Q502
P. ON SW
SYSCON/SERVO/
DECK
HEATER_DC +
HEATER_DC -
OPERATION

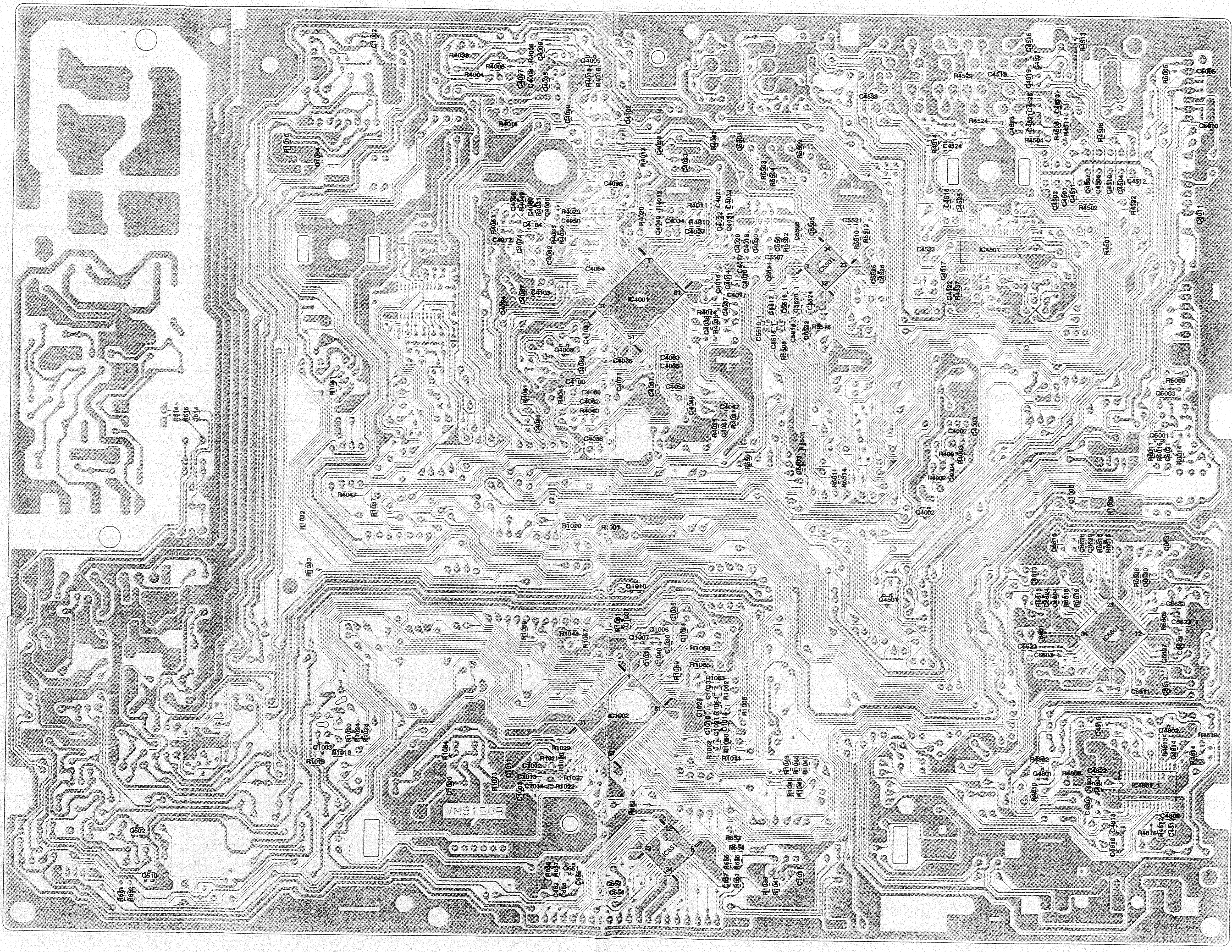
PRINTED CIRCUIT BOARDS
SYSCON (INSERTED PARTS)
SOLDER SIDE



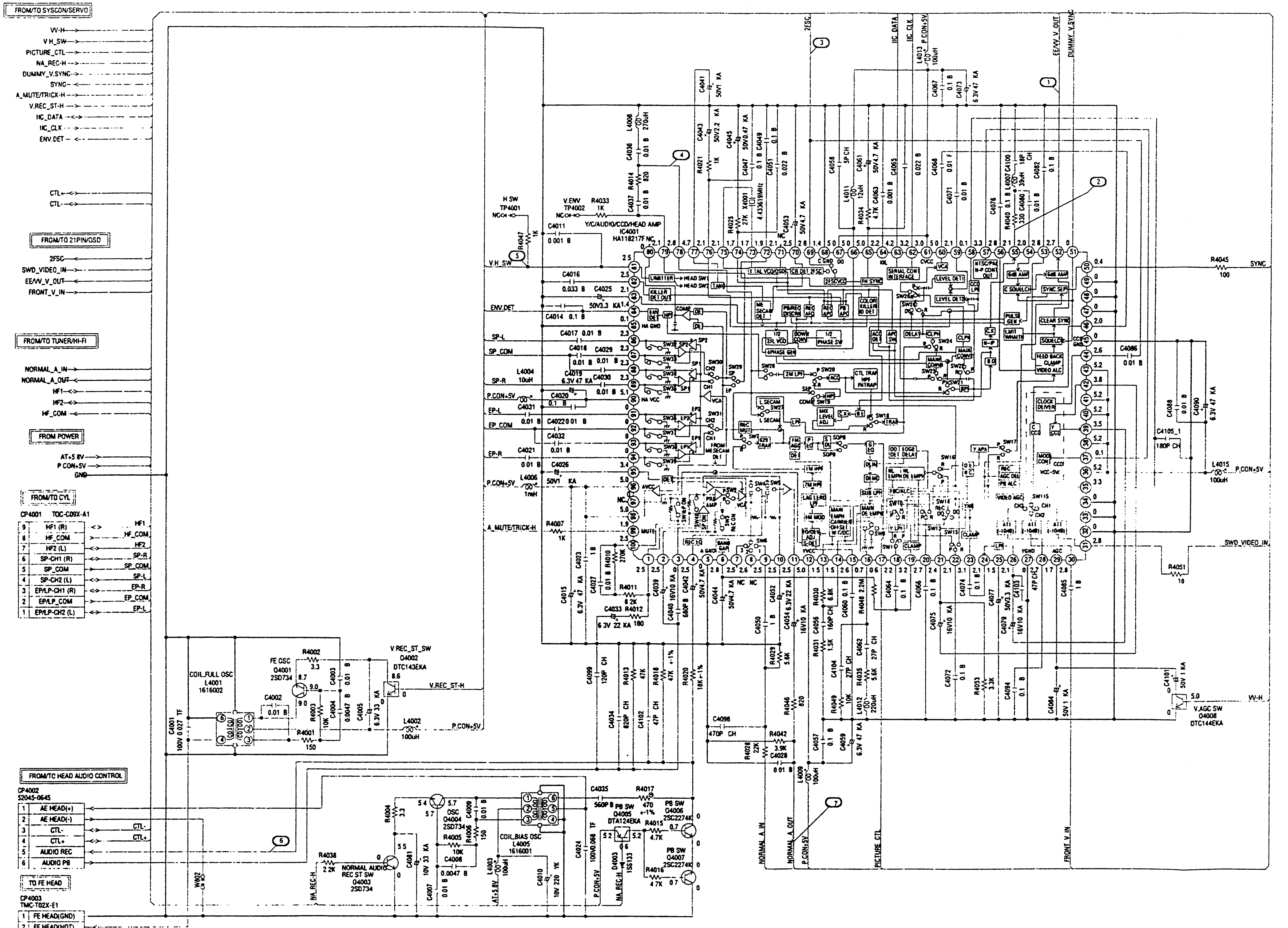
F-1

F-2

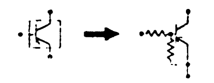
PRINTED CIRCUIT BOARDS
SYSCON (CHIP MOUNTED PARTS)
SOLDER SIDE


IC4001
IC4501
IC5501
IC1002
IC5601
IC4801
IC651
VMS150B

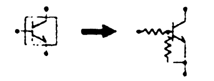
Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM


FROM/TO SYSCON/SERVO
VV-H
V.H_SW
PICTURE_CTL
NA_REC-H
DUMMY_V.SYNC
SYNC
A_MUTE/TRICK-H
V.REC_ST-H
IIC_DATA
IIC_CLK
ENV.DET
CTL+
CTL-
FROM/TO 21PIN/OSD
2FSC
SWD_VIDEO_IN
EE/V_V_OUT
FRONT_V_IN
FROM/TO TUNER/HI-FI
NORMAL_A_IN
NORMAL_A_OUT
HF1
HF2
HF_COM
FROM POWER
AT+5.8V
P.CON+5V
GND
FROM/TO CYL
CP4001 TOC-C09X-A1
9 HF1 (R)
8 HF_COM
7 HF2 (L)
6 SP-CH1 (R)
5 SP_COM
4 SP-CH2 (L)
3 EP/LP-CH1 (R)
2 EP/LP_COM
1 EP/LP-CH2 (L)
FROM/TO HEAD AUDIO CONTROL
CP4002 52045-0645
1 AE HEAD(+)
2 AE HEAD(-)
3 CTL-
4 CTL+
5 AUDIO REC
6 AUDIO PB
TO FE HEAD
CP4003 TMC-T02X-E1
1 FE HEAD(GND)
2 FE HEAD(HOT)
Y/C/AUDIO/CCD/HEAD AMP
IC4001
HA118217F NC
H SW TP4001
V.ENV TP4002
COIL,FULL OSC L4001 1616002
FE OSC Q4001 2SD734
V.REC_ST_SW Q4002 DTC143EKA
OSC Q4004 2SD734
COIL,BIAS OSC L4005 1616001
NORMAL AUDIO REC ST SW Q4003 2SD734
PB SW Q4005 DTA124EKA
PB SW Q4006 2SC2274K
PB SW Q4007 2SC2274K
V.AGC SW Q4008 DTC144EKA
X4001 4.433619MHz
R4045 100
L4015 100uH
PCB010 VM9150

CAUTION: DIGITAL TRANSISTOR



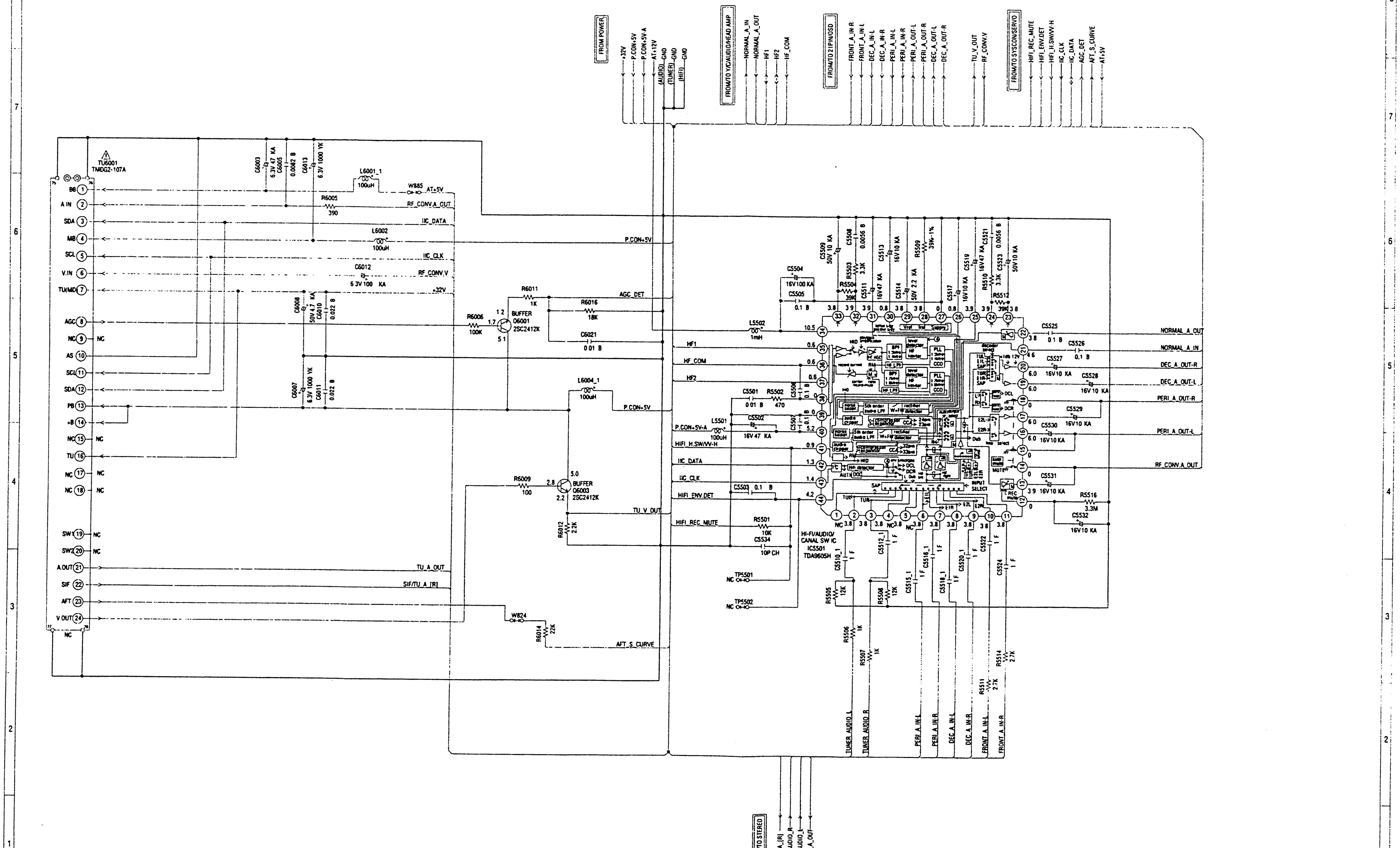
CAUTION: DIGITAL TRANSISTOR



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

TUNER/HI-FI SCHEMATIC DIAGRAM


FROM POWER
+32V
P.CON+5V
P.CON+5V-A
AT+12V
(AUDIO) GND
(TUNER) GND
(HIFI) GND
FROM/TO Y/C/AUDIO/HEAD AMP
NORMAL_A_IN
NORMAL_A_OUT
HF1
HF2
HF_COM
FROM/TO 21PIN/OSD
FRONT_A_IN-R
FRONT_A_IN-L
DEC_A_IN-L
DEC_A_IN-R
PERI_A_IN-L
PERI_A_IN-R
PERI_A_OUT-L
PERI_A_OUT-R
DEC_A_OUT-L
DEC_A_OUT-R
TU_V_OUT
RF_CONV.V
FROM/TO SYSCON/SERVO
HIFI_REC_MUTE
HIFI_ENV.DET
HIFI_H.SW/VV-H
IIC_CLK
IIC_DATA
AGC_DET
AFT_S_CURVE
AT+5V
TU6001
TMDG2-107A
BB 1
A IN 2
SDA 3
MB 4
SCL 5
V.IN 6
TU(MD) 7
AGC 8
NC 9 NC
AS 10
SCL 11
SDA 12
PB 13
+B 14
NC 15 NC
TU 16
NC 17 NC
NC 18 NC
SW1 19 NC
SW2 20 NC
A.OUT 21
SIF 22
AFT 23
V OUT 24
NC
C6003 6.3V 47 KA
C6005 0.0082 B
C6013 6.3V 1000 YK
L6001_1 100uH
W885
R6005 390
L6002 100uH
C6012 6.3V 100 KA
C6008 50V 4.7 KA
C6010 0.022 B
C6007 6.3V 1000 YK
C6011 0.022 B
R6006 100K
R6011 1K
R6016 18K
C6021 0.01 B
BUFFER Q6001 2SC2412K
L6004_1 100uH
R6009 100
BUFFER Q6003 2SC2412K
R6012 2.2K
W824
R6014 22K
TU_A_OUT
SIF/TU_A_[R]
RF_CONV.A_OUT
L5502 1mH
C5504 16V 100 KA
C5505 0.1 B
C5501 0.01 B
R5502 470
C5506 0.1 B
C5502 16V 47 KA
C5507 0.1 B
L5501 100uH
C5503 0.1 B
R5501 10K
C5534 10P CH
HI-FI/AUDIO/ CANAL SW IC
IC5501
TDA9605H
TP5501 NC
TP5502 NC
C5509 50V 10 KA
C5508 0.0056 B
R5503 3.3K
R5504 39K
C5511 16V 47 KA
C5513 16V 10 KA
C5514 50V 2.2 KA
R5509 39K-1%
C5517 16V 10 KA
C5519 16V 47 KA
R5510 3.3K
C5521 0.0056 B
C5523 50V 10 KA
R5512 39K
C5525 0.1 B
C5526 0.1 B
C5527 16V 10 KA
C5528 16V 10 KA
C5529 16V 10 KA
C5530 16V 10 KA
C5531 16V 10 KA
R5516 3.3M
C5532 16V 10 KA
C5510_1 1 F
C5512_1 1 F
C5515_1 1 F
C5516_1 1 F
C5518_1 1 F
C5520_1 1 F
C5522 1 F
C5524 1 F
R5505 12K
R5508 12K
R5506 1K
R5507 1K
R5511 2.7K
R5514 2.7K
NORMAL_A_OUT
NORMAL_A_IN
DEC_A_OUT-R
DEC_A_OUT-L
PERI_A_OUT-R
PERI_A_OUT-L
RF_CONV.A_OUT
INPUT SELECT
MUTE
SAP
TUNER_AUDIO_L
TUNER_AUDIO_R
PERI_A_IN-L
PERI_A_IN-R
DEC_A_IN-L
DEC_A_IN-R
FRONT_A_IN-L
FRONT_A_IN-R
FROM/TO STEREO
SIF/TU_A_[R]
TUNER_AUDIO_R
TUNER_AUDIO_L
TU_A_OUT

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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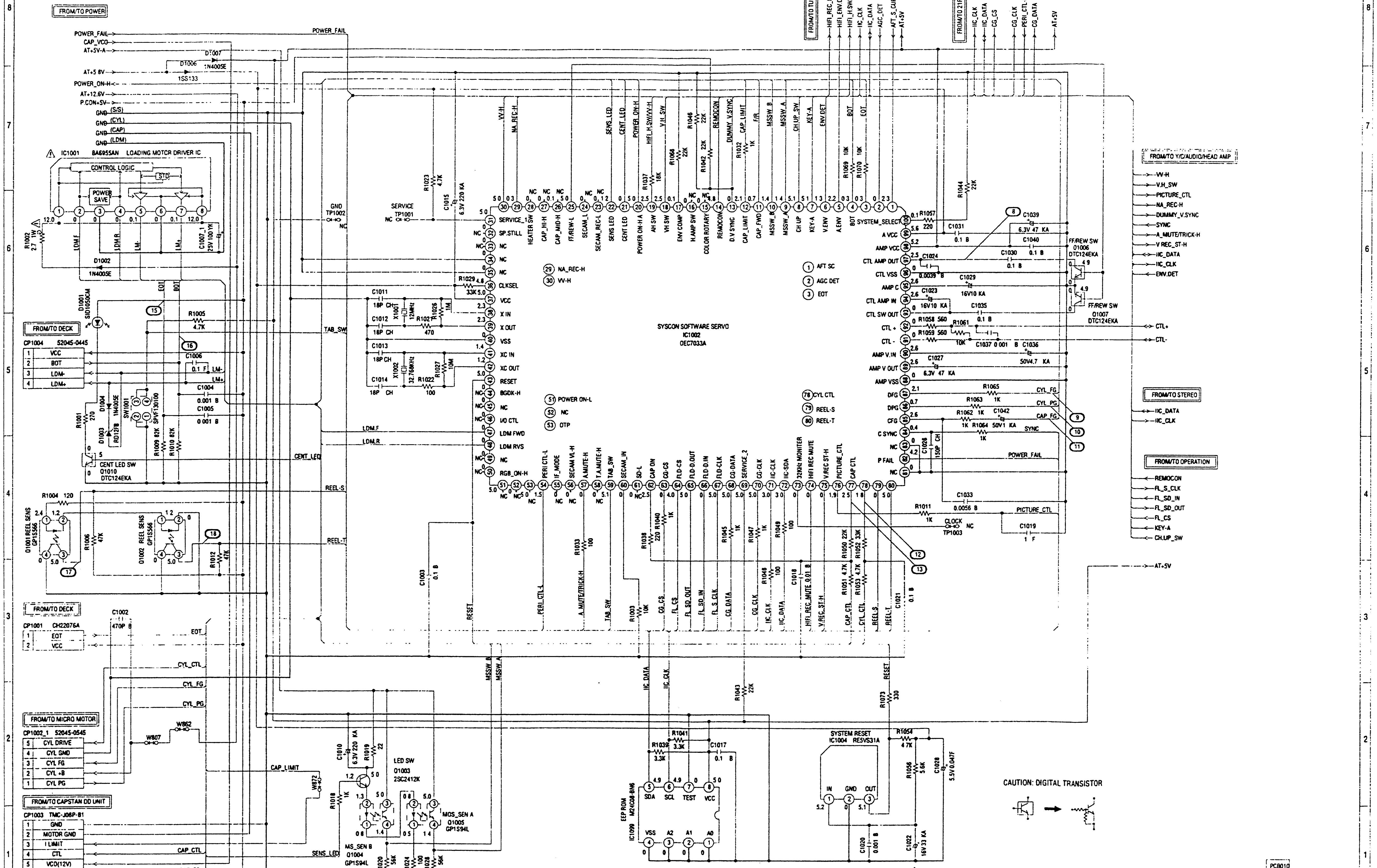
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB010
VM9150

SYSTEM CONTROL/SERVO SCHEMATIC DIAGRAM


FROM/TO POWER
POWER_FAIL
CAP_VCO
AT+5V-A
AT+5 8V
POWER_ON-H
AT+12.6V
P.CON+5V
GND (S/S)
GND (CYL)
GND (CAP)
GND (LDM)
D1007 1N4005E
D1006 1SS133
IC1001 BA6955AN LOADING MOTOR DRIVER IC
CONTROL LOGIC
POWER SAVE
STD
R1002 2.7 1W
D1002 1N4005E
LDM F
LDM R
LM-
LM+
C1007_1 25V 100 YK
D1001 SID1050CM
R1005 4.7K
FROM/TO DECK
CP1004 52045-0445
VCC
BOT
LDM-
LDM+
C1006 0.1 F
C1004 0.001 B
C1005 0.001 B
R1001 270
D1004 1N4005E
D1003 RD12FB
SW1001 SPVF130100
R1009 82K
R1010 82K
CENT LED SW
Q1010 DTC124EKA
R1004 120
Q1001 REEL SENS GP1S56
Q1002 REEL SENS GP1S56
R1006 47K
R1012 47K
FROM/TO DECK
CP1001 CH22076A
EOT
VCC
C1002 470P B
CYL_CTL
CYL_FG
CYL_PG
FROM/TO MICRO MOTOR
CP1002_1 52045-0545
CYL DRIVE
CYL GND
CYL FG
CYL +B
CYL PG
W807
W862
FROM/TO CAPSTAN DD UNIT
CP1003 TMC-J06P-B1
GND
MOTOR GND
I LIMIT
CTL
VCO(12V)
FG
CAP/M/F/R
VCC(5V)
W806
CAP_CTL
CAP_FG
F/R
CAP_LIMIT
W872
SENS_LED
GND TP1002
SERVICE TP1001
TAB_SW
LDM_F
LDM_R
CENT_LED
REEL-S
REEL-T
C1011 18P CH
C1012 18P CH
X1001 12MHz
R1021 470
R1026 1M
C1013 18P CH
C1014 18P CH
X1002 32.768KHz
R1022 100
R1027 10M
R1023 4.7K
C1015 6.3V 220 KA
R1029 4.8 33K
C1003 0.1 B
SYSCON SOFTWARE SERVO
IC1002
OEC7033A
SERVICE_1
SP.STILL
CLKSEL
VCC
X IN
X OUT
VSS
XC IN
XC OUT
RESET
BGDK-H
I/O CTL
LDM FWD
LDM RVS
RGB_ON-H
HEATER SW
CAP_MID-H
FF/REW-L
SECAM_REC-L
SENS LED
CENT LED
POWER ON-H A
AH SW
VH SW
ENV COMP
H.AMP SW
COLOR ROTARY
REMOCON
D.V SYNC
CAP_LIMIT
F/R
MSSW_B
MSSW_A
CH UP
KEY-A
V.ENV
A.ENV
BOT
EOT
SYSTEM_SELECT
A VCC
AMP VCC
CTL AMP OUT
CTL VSS
AMP C
CTL AMP IN
CTL SW OUT
CTL +
CTL -
AMP V.IN
AMP V OUT
AMP VSS
DFG
DPG
CFG
C SYNC
P FAIL
PERI CTL-L
IF_MODE
SECAM VL-H
A.MUTE-H
T.A.MUTE-H
TAB_SW
SECAM_IN
SD-L
CAP ON
CG-CS
FLD-CS
FLD-D.OUT
FLD-D.IN
FLD-CLK
CG-DATA
SERVICE_2
CG-CLK
IIC-CLK
IIC-SDA
32KHz MONITER
HIFI REC MUTE
V.REC ST-H
PICTURE_CTL
CAP CTL
(1) AFT SC
(2) AGC DET
(3) EOT
(29) NA_REC-H
(30) VV-H
(51) POWER ON-L
(52) NC
(53) OTP
(78) CYL CTL
(79) REEL-S
(80) REEL-T
FROM/TO TUNER/Hi-Fi
HIFI_REC_MUTE
HIFI_ENV.DET
HIFI_H.SW/V-H
IIC_CLK
IIC_DATA
AGC_DET
AFT_S_CURVE
AT+5V
FROM/TO 21PIN/OSD
CG_CS
CG_CLK
PERI_CTL-L
CG_DATA
R1046 22K
R1056 22K
R1042 22K
R1032 1K
R1037 18K
R1069 10K
R1070 10K
R1044 22K
R1057 220
C1031 0.1 B
C1039 6.3V 47 KA
C1040 0.1 B
C1030 0.1 B
C1024
C1029 16V10 KA
C1023 16V10 KA
C1035 0.1 B
R1058 560
R1059 560
R1061 10K
C1037 0.001 B
C1036 50V4.7 KA
C1027 6.3V 47 KA
R1065 1K
R1063 1K
R1062 1K
C1042
R1064 50V1 KA
C1026 150P CH
FF/REW SW
Q1006 DTC124EKA
Q1007 DTC124EKA
CTL+
CTL-
SYNC
POWER_FAIL
FROM/TO Y/C/AUDIO/HEAD AMP
VV-H
V.H_SW
PICTURE_CTL
NA_REC-H
DUMMY_V.SYNC
SYNC
A_MUTE/TRICK-H
V REC_ST-H
IIC_DATA
IIC_CLK
ENV.DET
FROM/TO STEREO
IIC_DATA
IIC_CLK
FROM/TO OPERATION
REMOCON
FL_S_CLK
FL_SD_IN
FL_SD_OUT
FL_CS
KEY-A
CH.UP_SW
AT+5V
C1033 0.0056 B
R1011 1K
CLOCK TP1003
C1019 1 F
PICTURE_CTL
R1040 1K
R1033 100
R1038 220
R1045 1K
R1047 1K
R1049 100
R1048 100
C1018
R1050 22K
R1052 33K
R1051 4.7K
R1053 4.7K
C1021 0.1 B
R1003 10K
PERI_CTL-L
A_MUTE/TRICK-H
TAB_SW
CG_CS
FL_CS
FL_SD_OUT
FL_SD_IN
FL_S_CLK
CG_DATA
CG_CLK
IIC_CLK
IIC_DATA
HIFI_REC_MUTE
V.REC_ST-H
CAP_CTL
CYL_CTL
REEL-S
REEL-T
RESET
MSSW_B
MSSW_A
IIC_DATA
IIC_CLK
R1043 22K
R1073 330
C1010 6.3V 220 KA
R1019 22
R1018 1K
LED SW
Q1003 2SC2412K
MS_SEN B
Q1004 GP1S94L
MS_SEN A
Q1005 GP1S94L
R1025 56K
R1024 100
R1028 56K
R1041 3.3K
R1039 3.3K
C1017 0.1 B
SDA
SCL
TEST
VCC
VSS
A2
A1
A0
EEP ROM
M24C08-BN6
IC1099
SYSTEM RESET
IC1004 RE5VS31A
IN
GND
OUT
R1054 4.7K
R1055 5.6K
C1028 5.5V 0.047F
C1020 0.001 B
C1022 16V 33 KA
CAUTION: DIGITAL TRANSISTOR

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

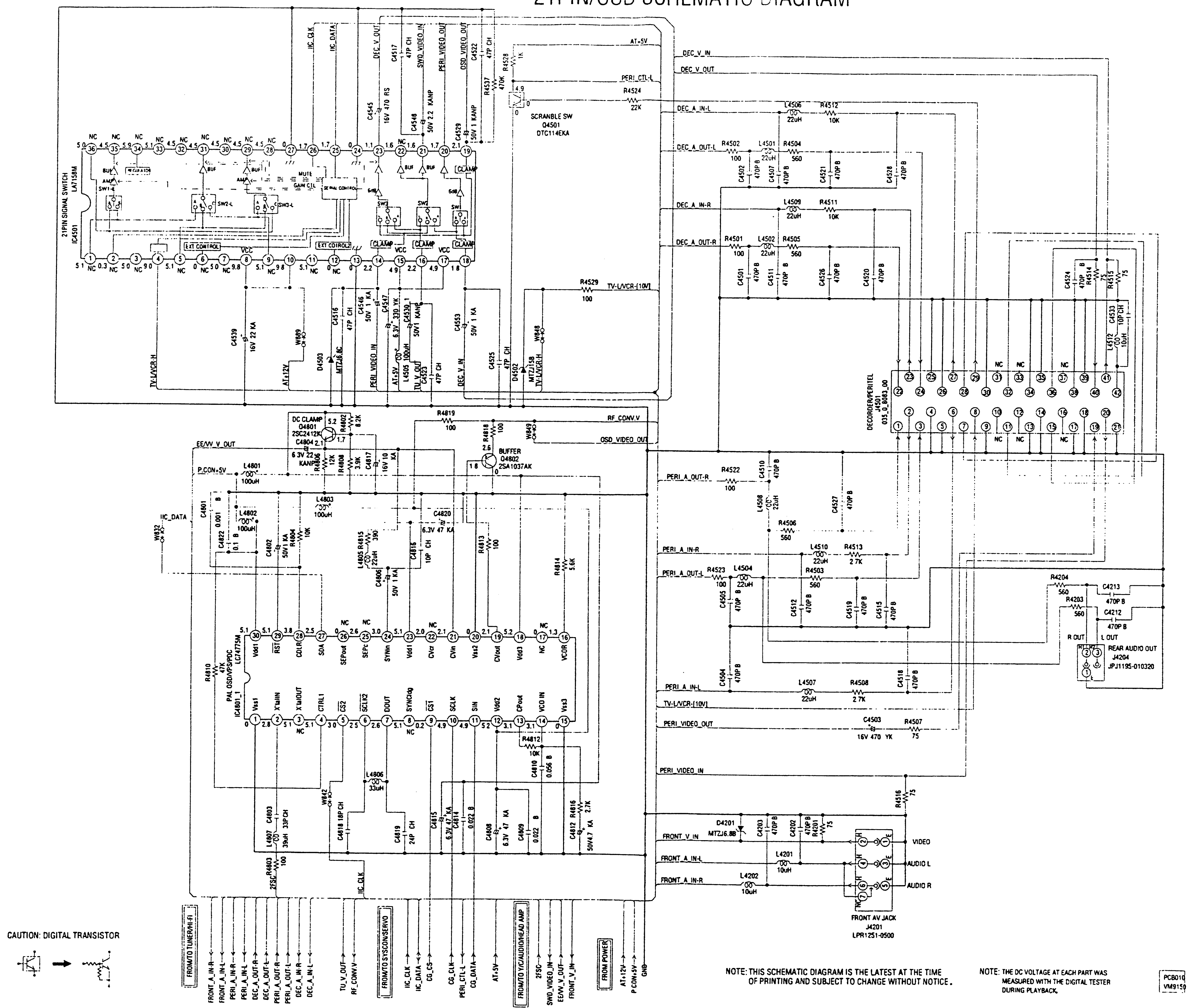
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM9150

21PIN/OSD SCHEMATIC DIAGRAM

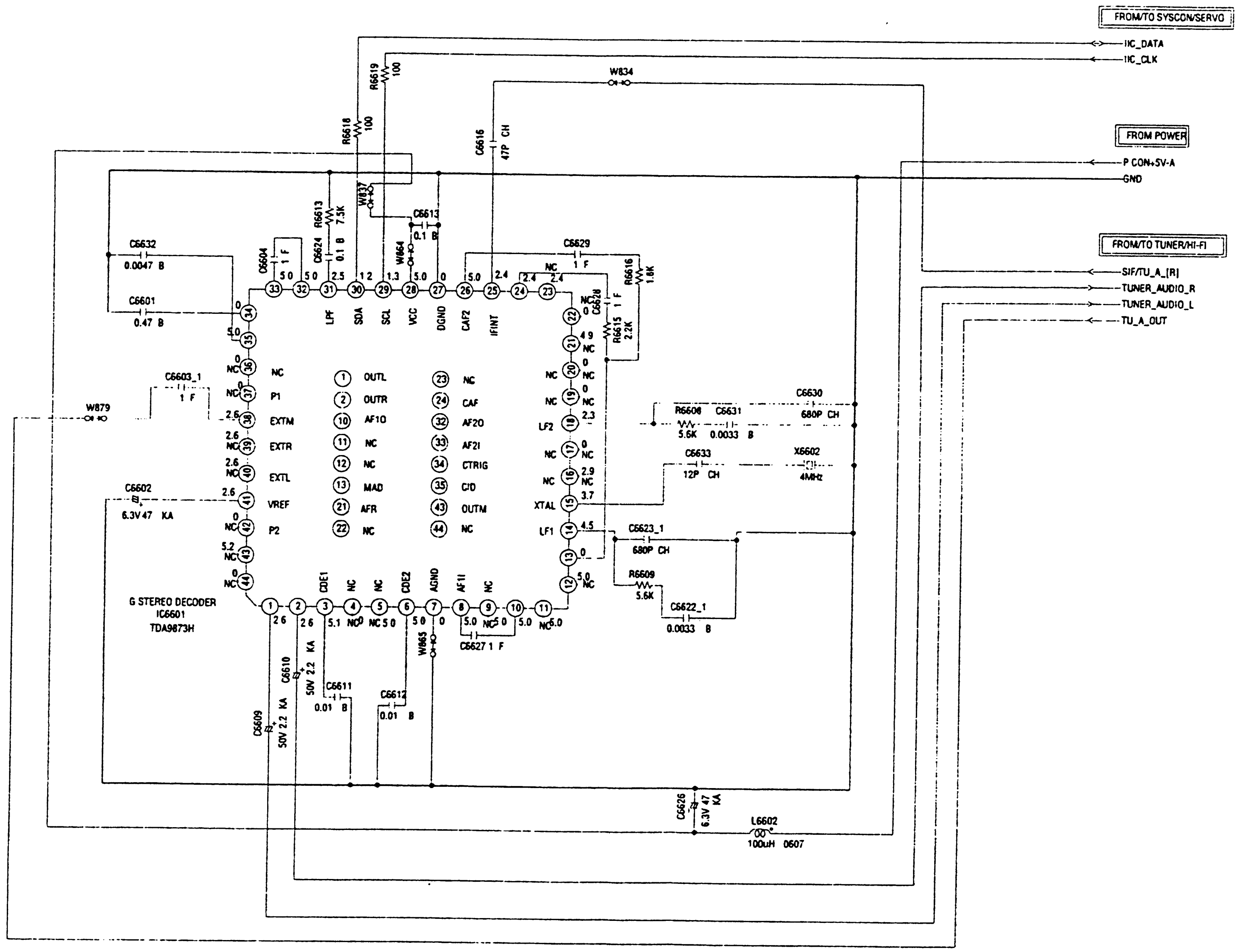

IC4501 21PIN SIGNAL SWITCH LA7158M
SCRANBLE SW Q4501 DTC114EKA
AT+5V
DEC_V_IN
DEC_V_OUT
PERI_CTL-L
DEC_A_IN-L
DEC_A_OUT-L
DEC_A_IN-R
DEC_A_OUT-R
TV-L/VCR-[10V]
IIC_CLK
IIC_DATA
DEC_V_OUT
SWD_VIDEO_IN
PERI_VIDEO_OUT
OSD_VIDEO_OUT
EXT CONTROL
SERIAL CONTROL
GAIN CTL
MUTE
CLAMP
BUF
AMP
SW1-L
SW2-L
SW3-L
SW1
SW2
SW3
6dB
VCC
DC CLAMP Q4801 2SC2412K
BUFFER Q4802 2SA1037AK
RF_CONV.V
OSD_VIDEO_OUT
EE/V_V_OUT
P.CON+5V
IC4801_1 PAL OSD/VPS/PDC LC74775M
Vdd1
RST
CDLR
SDA
SEPout
SEPc
SYNin
Vdd1
CVcr
CVin
Vss2
CVout
Vdd3
NC
VCOR
Vss1
Xtalin
Xtalout
CTRL1
CS2
SCLK2
DOUT
SYNCdg
CS1
SCLK
SIN
Vdd2
CPout
VCO IN
Vss3
DECORDER/PERITEL J4501 035_0_B083_00
PERI_A_OUT-R
PERI_A_IN-R
PERI_A_OUT-L
PERI_A_IN-L
TV-L/VCR-[10V]
PERI_VIDEO_OUT
PERI_VIDEO_IN
REAR AUDIO OUT J4204 JPJ1195-010320
R OUT
L OUT
FRONT_V_IN
FRONT_A_IN-L
FRONT_A_IN-R
D4201 MTZJ6.8B
VIDEO
AUDIO L
AUDIO R
FRONT AV JACK J4201 LPR1251-0500
FROM/TO TUNER/HI-FI
FRONT_A_IN-R
FRONT_A_IN-L
PERI_A_IN-R
PERI_A_IN-L
DEC_A_OUT-R
DEC_A_OUT-L
PERI_A_OUT-R
PERI_A_OUT-L
DEC_A_IN-R
DEC_A_IN-L
TU_V_OUT
RF_CONV.V
FROM/TO SYSCON/SERVO
IIC_CLK
IIC_DATA
CG_CS
CG_CLK
PERI_CTL-L
CG_DATA
AT+5V
FROM/TO Y/C/AUDIO/HEAD AMP
2FSC
SWD_VIDEO_IN
EE/V_V_OUT
FRONT_V_IN
FROM POWER
AT+12V
P.CON+5V
GND
CAUTION: DIGITAL TRANSISTOR

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
VM9150

STEREO SCHEMATIC DIAGRAM



FROM/TO SYSCON/SERVO
IIC_DATA
IIC_CLK
FROM POWER
P CON+5V-A
GND
FROM/TO TUNER/HI-FI
SIF/TU_A_[R]
TUNER_AUDIO_R
TUNER_AUDIO_L
TU_A_OUT
W834
R6619 100
R6618 100
C6616 47P CH
R6613 7.5K
C6624 0.1 B
W837
C6613 0.1 B
W864
C6604 1 F
C6629 1 F
R6616 1.8K
C6628 1 F
R6615 2.2K
C6632 0.0047 B
C6601 0.47 B
C6603_1 1 F
W879
C6602 6.3V 47 KA
R6606 5.6K
C6631 0.0033 B
C6630 680P CH
C6633 12P CH
X6602 4MHz
C6623_1 680P CH
R6609 5.6K
C6622_1 0.0033 B
G STEREO DECODER
IC6601
TDA9873H
LPF
SDA
SCL
VCC
DGND
CAF2
IFINT
CDE1
NC
NC
CDE2
AGND
AF1I
NC
LF2
XTAL
LF1
NC
P1
EXTM
EXTR
EXTL
VREF
P2
① OUTL
② OUTR
⑩ AF1O
⑪ NC
⑫ NC
⑬ MAD
㉑ AFR
㉒ NC
㉓ NC
㉔ CAF
㉜ AF2O
㉝ AF2I
㉞ CTRIG
㉟ C/D
(43) OUTM
(44) NC
W865
C6627 1 F
C6610 50V 2.2 KA
C6611 0.01 B
C6612 0.01 B
C6609 50V 2.2 KA
C6626 6.3V 47 KA
L6602 100uH 0607

NOTE: THE DC VOLTAGE AT EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

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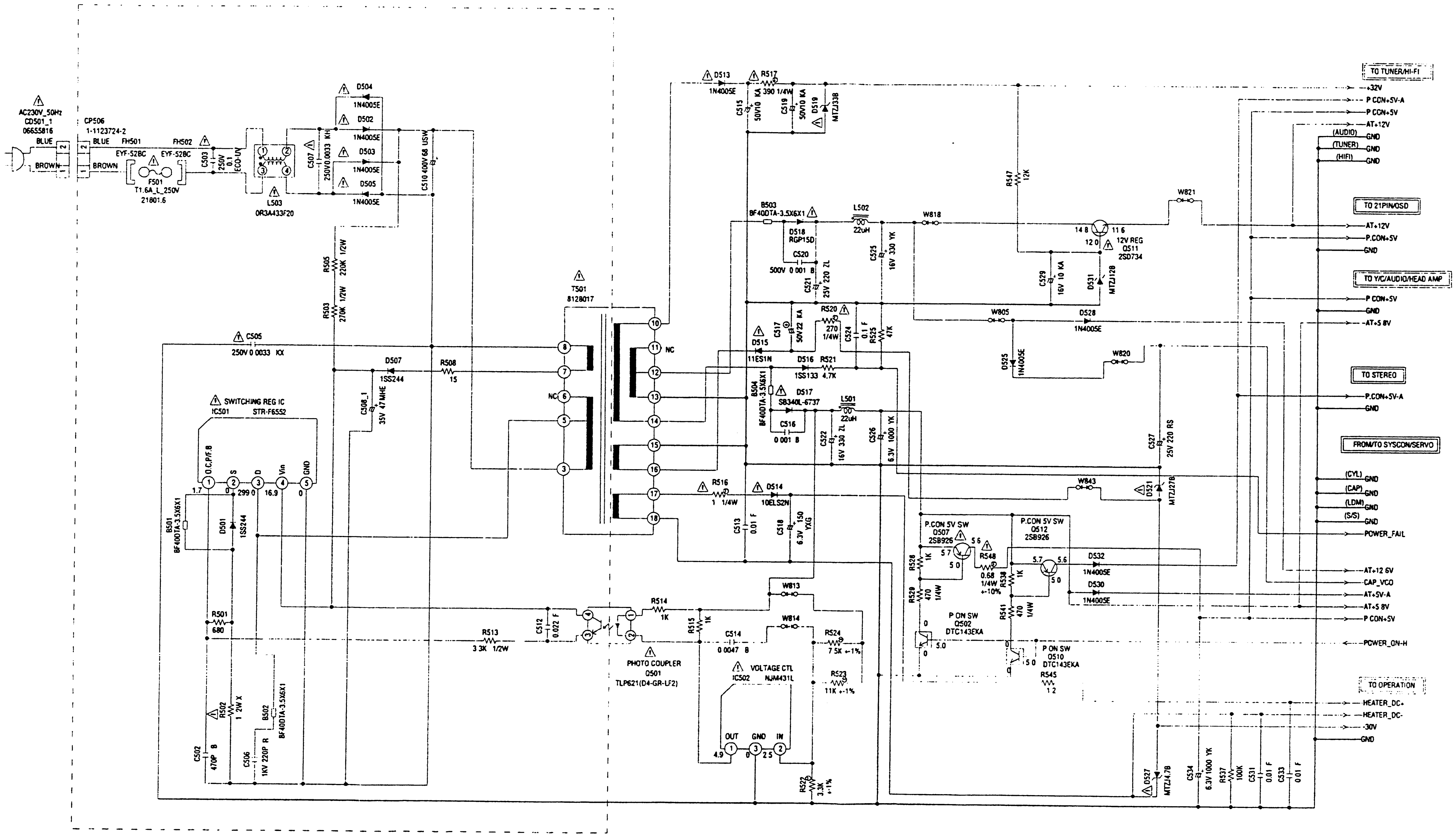
PCB010
VM9150

POWER SCHEMATIC DIAGRAM


AC230V_50Hz
CD501_1
06655816
BLUE
BROWN
CP506
1-1123724-2
FH501
FH502
EYF-52BC
F501
T1.6A_L_250V
21801.6
C503
250V 0.1 ECQ-UV
L503
0R3A433F20
C507
250V 0.0033 KH
D504
D502
D503
D505
1N4005E
C510 400V 68 USW
R505
220K 1/2W
R503
270K 1/2W
T501
8128017
C505
250V 0.0033 KX
D507
1SS244
R508
15
C508_1
35V 47 MHE
SWITCHING REG IC
IC501 STR-F6552
O.C.P/F.B
S
D
Vin
GND
B501
BF40DTA-3.5X6X1
D501
1SS244
R501
680
R502
1.2W X
B502
BF40DTA-3.5X6X1
C502
470P B
C506
1KV 220P R
R513
3.3K 1/2W
C512
0.022 F
PHOTO COUPLER
Q501
TLP621(D4-GR-LF2)
R514
1K
R515
1K
C514
0.0047 B
VOLTAGE CTL
IC502 NJM431L
OUT
GND
IN
R522
3.3K +-1%
R523
11K +-1%
R524
7.5K +-1%
W813
W814
D513
1N4005E
R517
390 1/4W
C515
50V10 KA
C519
50V10 KA
D519
MTZJ33B
B503
BF40DTA-3.5X6X1
D518
RGP15D
C520
500V 0.001 B
C521
25V 220 ZL
L502
22uH
C525
16V 330 YK
W818
C517
50V22 KA
R520
270 1/4W
C524
0.1 F
R525
47K
D515
11ES1N
D516
1SS133
R521
4.7K
B504
BF40DTA-3.5X6X1
D517
SB340L-6737
C516
0.001 B
L501
22uH
C522
16V 330 ZL
C526
6.3V 1000 YK
R516
1 1/4W
D514
10ELS2N
C513
0.01 F
C518
6.3V 150 YXG
R547
12K
C529
16V 10 KA
D531
MTZJ12B
Q511
12V REG
2SD734
W821
W805
D528
1N4005E
D525
1N4005E
W820
C527
25V 220 RS
W843
D521
MTZJ27B
P.CON 5V SW
Q507
2SB926
R548
0.68 1/4W +-10%
Q512
2SB926
D532
1N4005E
D530
1N4005E
R528
1K
R529
470 1/4W
R538
1K
R541
470 1/4W
P.ON SW
Q502
DTC143EKA
P.ON SW
Q510
DTC143EKA
R545
1.2
D527
MTZJ4.7B
C534
6.3V 1000 YK
R537
100K
C531
0.01 F
C533
0.01 F
TO TUNER/HI-FI
+32V
P.CON+5V-A
P.CON+5V
AT+12V
(AUDIO) GND
(TUNER) GND
(HIFI) GND
TO 21PIN/OSD
AT+12V
P.CON+5V
GND
TO Y/C/AUDIO/HEAD AMP
P.CON+5V
GND
AT+5.8V
TO STEREO
P.CON+5V-A
GND
FROM/TO SYSCON/SERVO
(CYL) GND
(CAP) GND
(LDM) GND
(S/S) GND
POWER_FAIL
AT+12.6V
CAP_VCO
AT+5V-A
AT+5.8V
P.CON+5V
POWER_ON-H
TO OPERATION
HEATER_DC+
HEATER_DC-
-30V
GND

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

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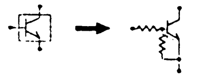
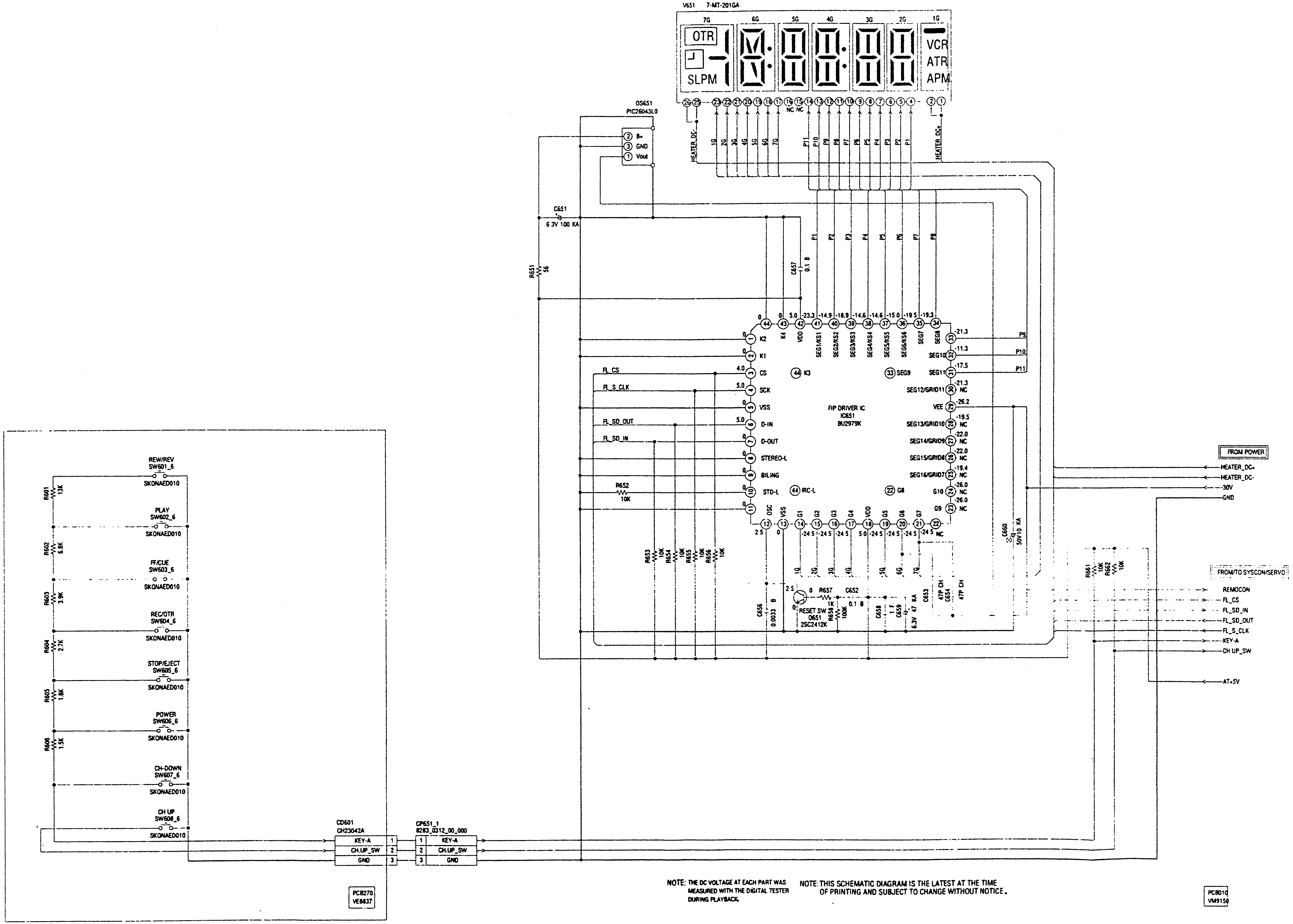
CAUTION: DIGITAL TRANSISTOR



PCB010
VM9150

OPERATION SCHEMATIC DIAGRAM


V651 7-MT-201GA
OTR
SLPM
VCR
ATR
APM
1G
2G
3G
4G
5G
6G
7G
HEATER_DC-
HEATER_DC+
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
OS651
PIC26043L0
B+
GND
Vout
C651
6.3V 100 KA
R651
56
C657
0.1 B
FIP DRIVER IC
IC651
BU2979K
K2
K1
CS
SCK
VSS
D-IN
D-OUT
STEREO-L
BILING
STD-L
OSC
K4
VDD
K3
SEG9
SEG8
SEG10
SEG11
SEG12/GRID11
VEE
SEG13/GRID10
SEG14/GRID9
SEG15/GRID8
SEG16/GRID7
G10
G9
G8
IRC-L
NC
FL_CS
FL_S_CLK
FL_SD_OUT
FL_SD_IN
R652
10K
R653
R654
R655
R656
10K
C656
0.0033 B
RESET SW
Q651
2SC2412K
R657
1K
R658
100K
C652
0.1 B
C658
1 F
C659
6.3V 47 KA
C653
47P CH
C654
47P CH
C660
50V10 KA
R661
10K
R662
10K
FROM POWER
HEATER_DC+
HEATER_DC-
-30V
GND
FROM/TO SYSCON/SERVO
REMOCON
FL_CS
FL_SD_IN
FL_SD_OUT
FL_S_CLK
KEY-A
CH UP_SW
AT+5V
REW/REV
SW601_6
PLAY
SW602_6
FF/CUE
SW603_6
REC/OTR
SW604_6
STOP/EJECT
SW605_6
POWER
SW606_6
CH-DOWN
SW607_6
CH UP
SW608_6
SKONAED010
R601
13K
R602
6.8K
R603
3.9K
R604
2.7K
R605
1.8K
R606
1.5K
CD601
CH23042A
CP651_1
8283_0312_00_000
KEY-A
CH.UP_SW
GND
PCB270
VE8437
PCB010
VM9150

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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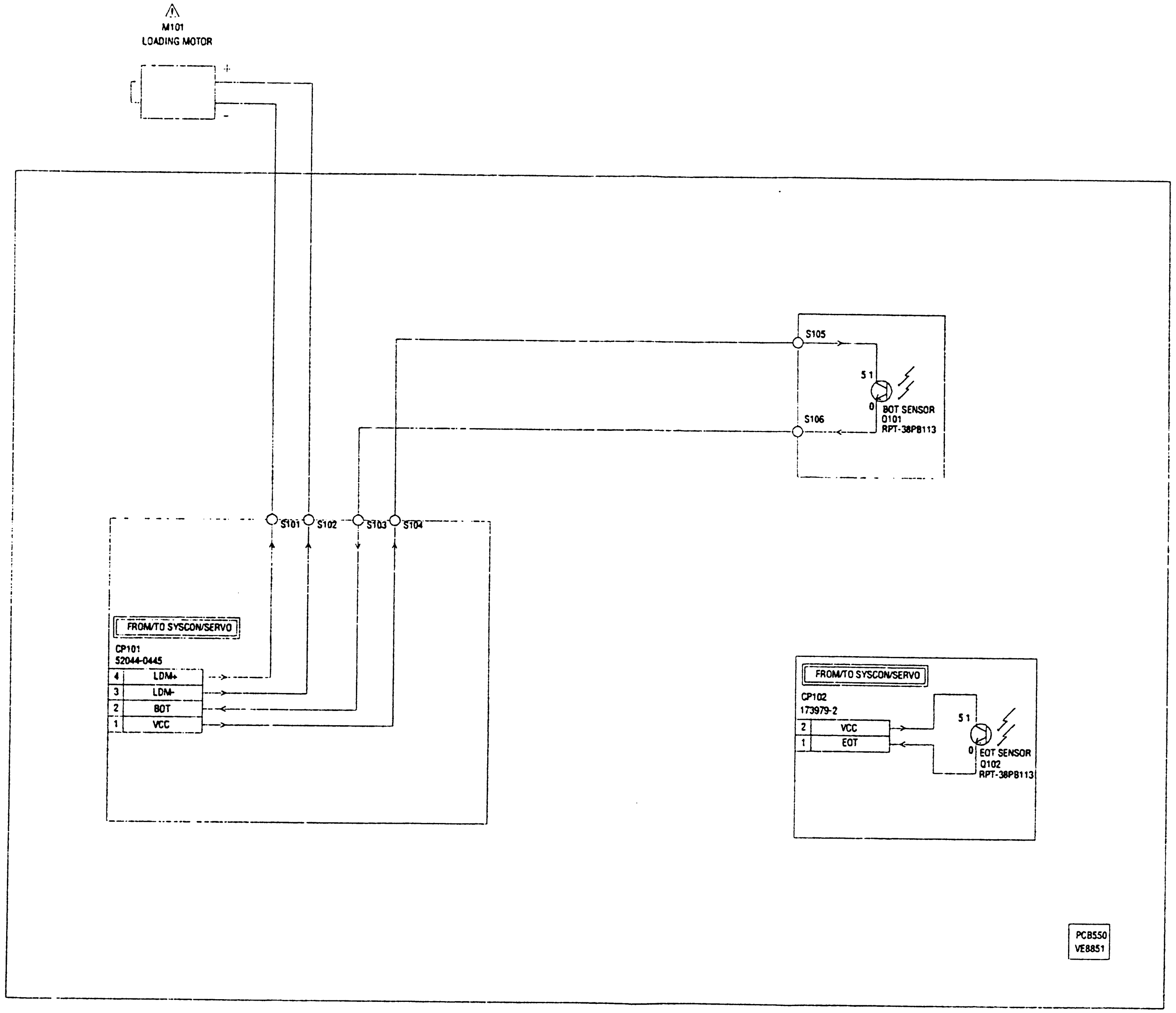
DECK SCHEMATIC DIAGRAM


M101
LOADING MOTOR
+
-
S101
S102
S103
S104
S105
S106
5 1
0
BOT SENSOR
Q101
RPT-38PB113
FROM/TO SYSCON/SERVO
CP101
52044-0445
4 LDM+
3 LDM-
2 BOT
1 VCC
FROM/TO SYSCON/SERVO
CP102
173979-2
2 VCC
1 EOT
5 1
0
EOT SENSOR
Q102
RPT-38PB113
PCB550
VE8851

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

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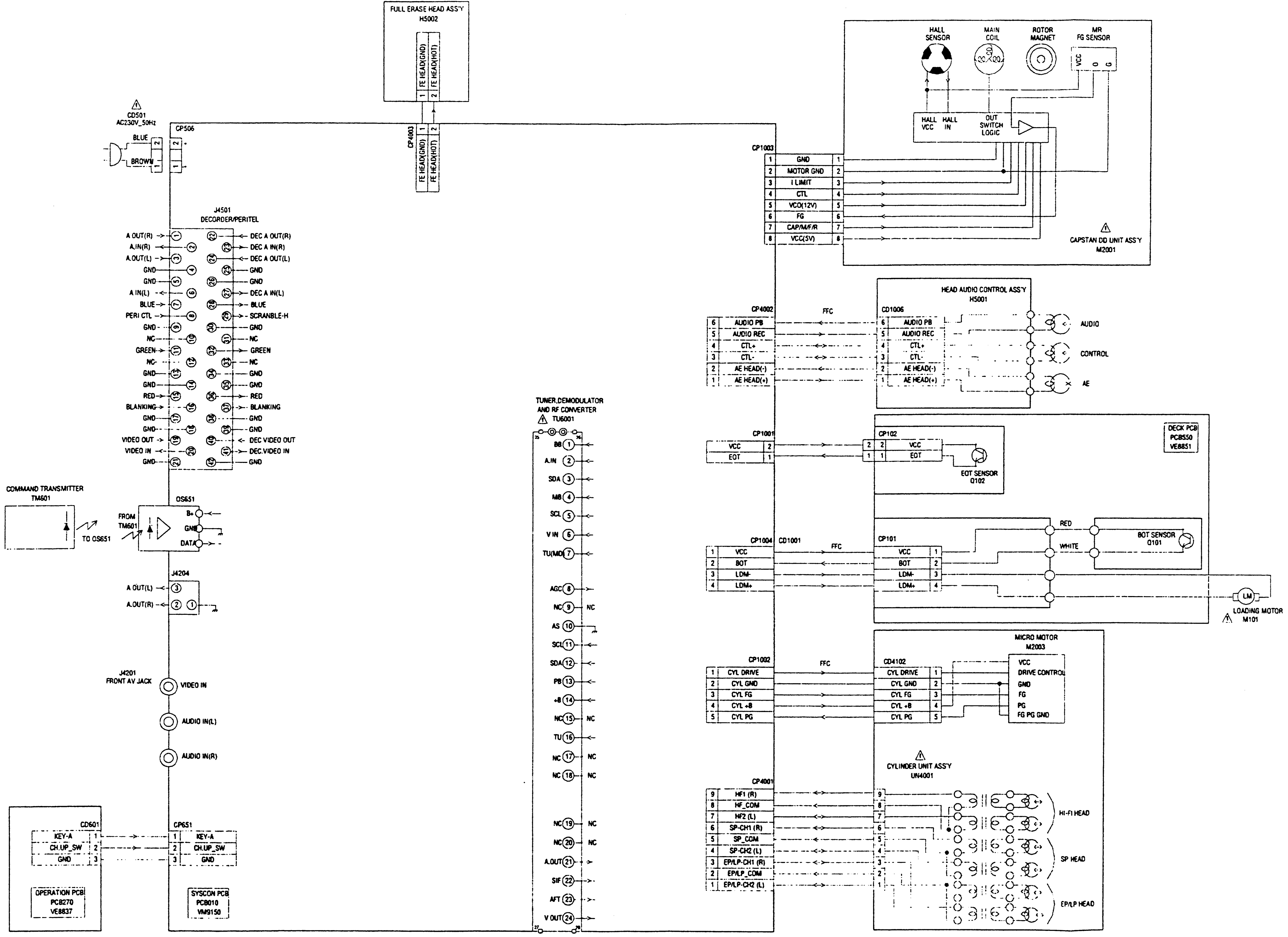
INTERCONNECTION DIAGRAM


FULL ERASE HEAD ASS'Y
H5002
1 FE HEAD(GND)
2 FE HEAD(HOT)
CP4003
CD501
AC230V_50Hz
BLUE
BROWN
CP506
J4501
DECORDER/PERITEL
A OUT(R) 1
A.IN(R) 2
A.OUT(L) 3
GND 4
GND 5
A IN(L) 6
BLUE 7
PERI CTL 8
GND 9
NC 10
GREEN 11
NC 12
GND 13
GND 14
RED 15
BLANKING 16
GND 17
GND 18
VIDEO OUT 19
VIDEO IN 20
GND 21
22 DEC A OUT(R)
23 DEC A IN(R)
24 DEC A OUT(L)
25 GND
26 GND
27 DEC A IN(L)
28 BLUE
29 SCRANBLE-H
30 GND
31 NC
32 GREEN
33 NC
34 GND
35 GND
36 RED
37 BLANKING
38 GND
39 GND
40 DEC VIDEO OUT
41 DEC.VIDEO IN
42 GND
COMMAND TRANSMITTER
TM601
TO OS651
FROM TM601
OS651
B+
GND
DATA
J4204
A OUT(L) 3
A.OUT(R) 2
1
J4201
FRONT AV JACK
VIDEO IN
AUDIO IN(L)
AUDIO IN(R)
CD601
KEY-A
CH.UP_SW
GND
OPERATION PCB
PCB270
VE8837
CP651
KEY-A
CH.UP_SW
GND
SYSCON PCB
PCB010
VM9150
TUNER.DEMODULATOR
AND RF CONVERTER
TU6001
BB 1
A.IN 2
SDA 3
MB 4
SCL 5
V IN 6
TU(MD) 7
AGC 8
NC 9 NC
AS 10
SCL 11
SDA 12
PB 13
+B 14
NC 15 NC
TU 16
NC 17 NC
NC 18 NC
NC 19 NC
NC 20 NC
A.OUT 21
SIF 22
AFT 23
V OUT 24
25
26
27
28
HALL SENSOR
MAIN COIL
ROTOR MAGNET
MR FG SENSOR
VCC
O
G
HALL VCC
HALL IN
OUT SWITCH LOGIC
CP1003
1 GND
2 MOTOR GND
3 I LIMIT
4 CTL
5 VCO(12V)
6 FG
7 CAP/M/F/R
8 VCC(5V)
CAPSTAN DD UNIT ASS'Y
M2001
HEAD AUDIO CONTROL ASS'Y
H5001
CP4002
FFC
CD1006
6 AUDIO PB
5 AUDIO REC
4 CTL+
3 CTL-
2 AE HEAD(-)
1 AE HEAD(+)
AUDIO
CONTROL
AE
DECK PCB
PCB550
VE8851
CP1001
VCC 2
EOT 1
CP102
EOT SENSOR
Q102
CP1004
CD1001
FFC
1 VCC
2 BOT
3 LDM-
4 LDM+
CP101
RED
WHITE
BOT SENSOR
Q101
LM
LOADING MOTOR
M101
MICRO MOTOR
M2003
CP1002
FFC
CD4102
1 CYL DRIVE
2 CYL GND
3 CYL FG
4 CYL +B
5 CYL PG
VCC
DRIVE CONTROL
GND
FG
PG
FG PG GND
CYLINDER UNIT ASS'Y
UN4001
CP4001
9 HF1 (R)
8 HF_COM
7 HF2 (L)
6 SP-CH1 (R)
5 SP_COM
4 SP-CH2 (L)
3 EP/LP-CH1 (R)
2 EP/LP_COM
1 EP/LP-CH2 (L)
HI-FI HEAD
SP HEAD
EP/LP HEAD

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.

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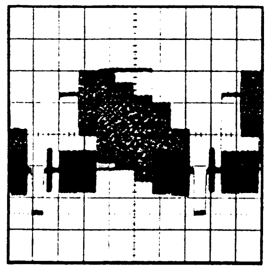
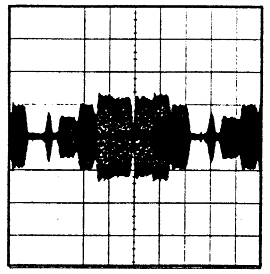
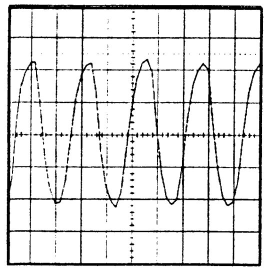
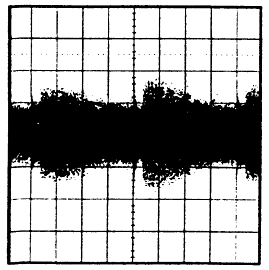
WAVEFORMS

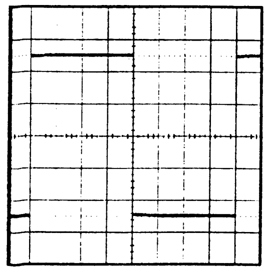
Y/C/AUDIO/HEAD AMP

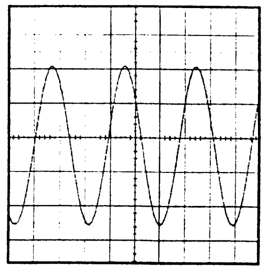

① REC
0.5V 10μs/div

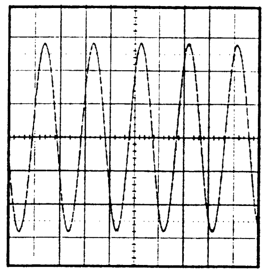

② PB
200mV 10μs/div

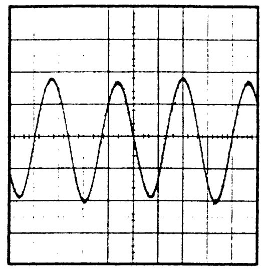

③ POWER ON
100mV 50ns/div

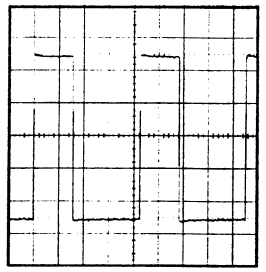

④ PB
100mV 5ms/div

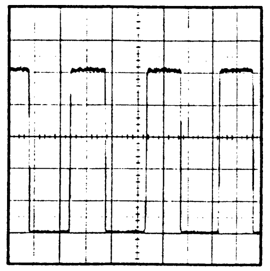

⑤ REC, PB
1V 5ms/div

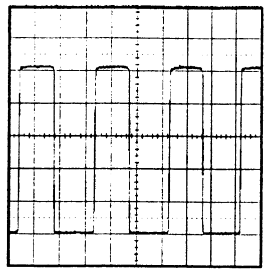

⑥ REC
10V 5μs/div


⑦ REC, PB
200mV 0.5ms/div

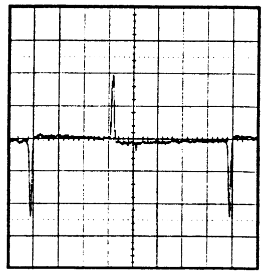

⑪ REC, PB
0.5V 0.5ms/div

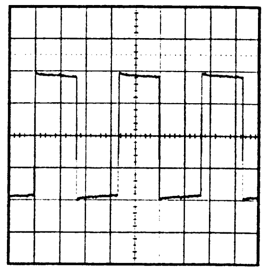

⑫ REC, PB
1V 5μs/div

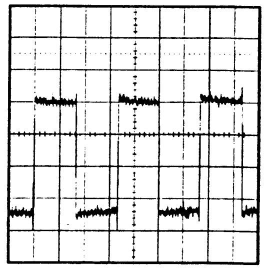

⑰ REC, PB
1V 0.5s/div

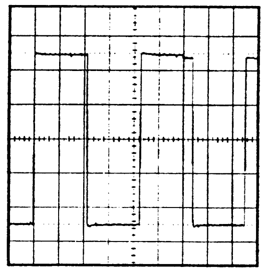

⑱ REC, PB
1V 0.5s/div

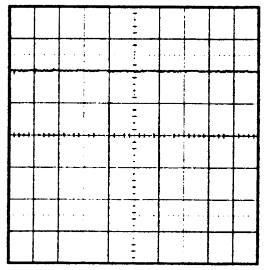
SYSCON/SERVO

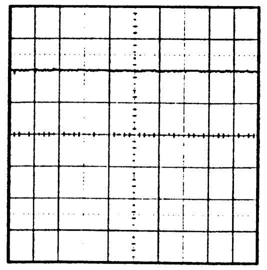

⑧ REC, PB
1V 5ms/div


⑨ REC, PB
1V 0.5ms/div


⑩ REC, PB
200mV 0.5ms/div

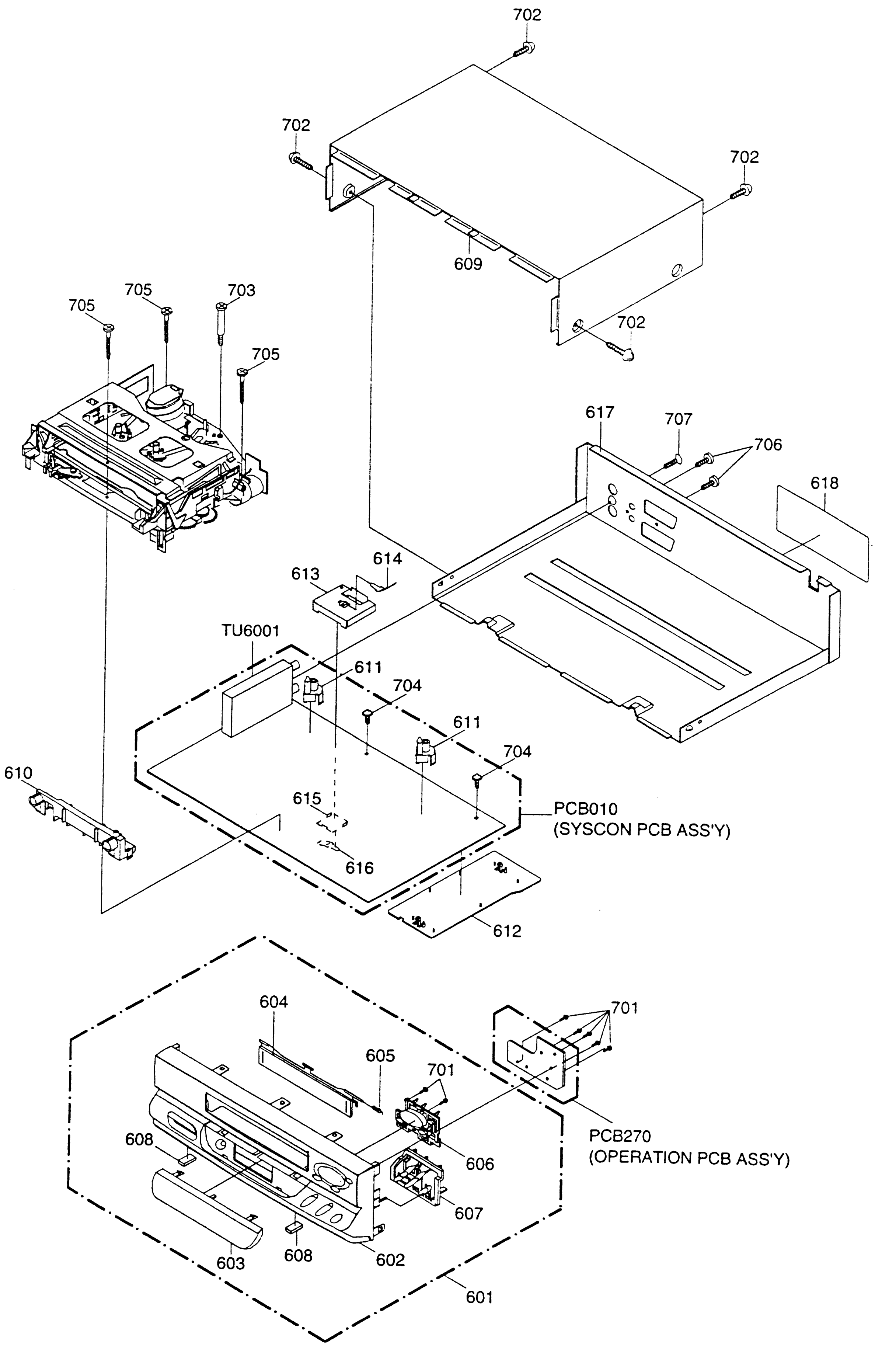

⑬ REC, PB
1V 5μs/div


⑮ CASS. LESS
1V 10μs/div

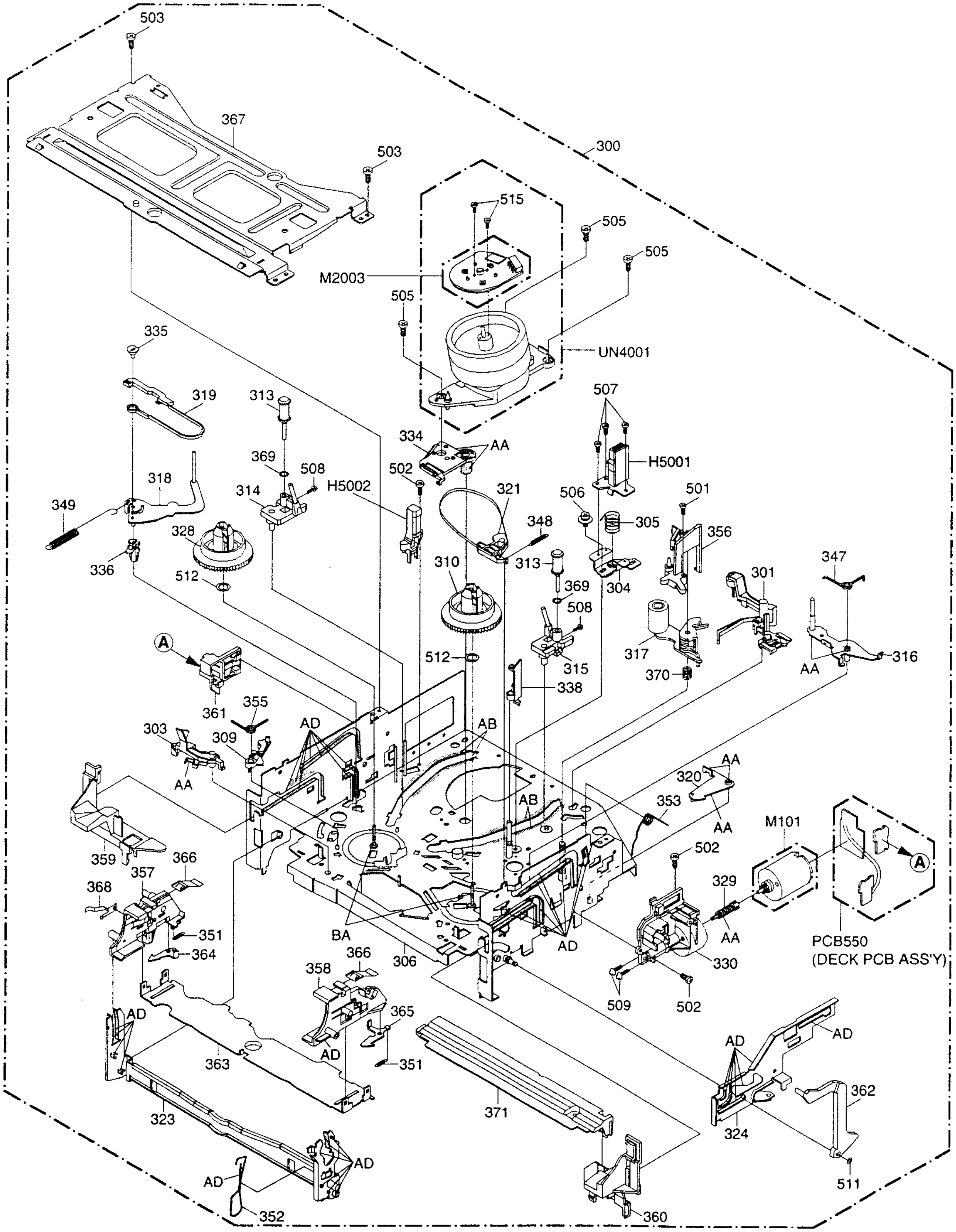

⑯ CASS. LESS
1V 10μs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW


702
702
702
609
705
705
703
705
702
617
707
706
618
613
614
TU6001
611
704
611
704
610
615
PCB010
(SYSCON PCB ASS'Y)
616
612
604
701
605
701
608
606
PCB270
(OPERATION PCB ASS'Y)
607
603
608
602
601

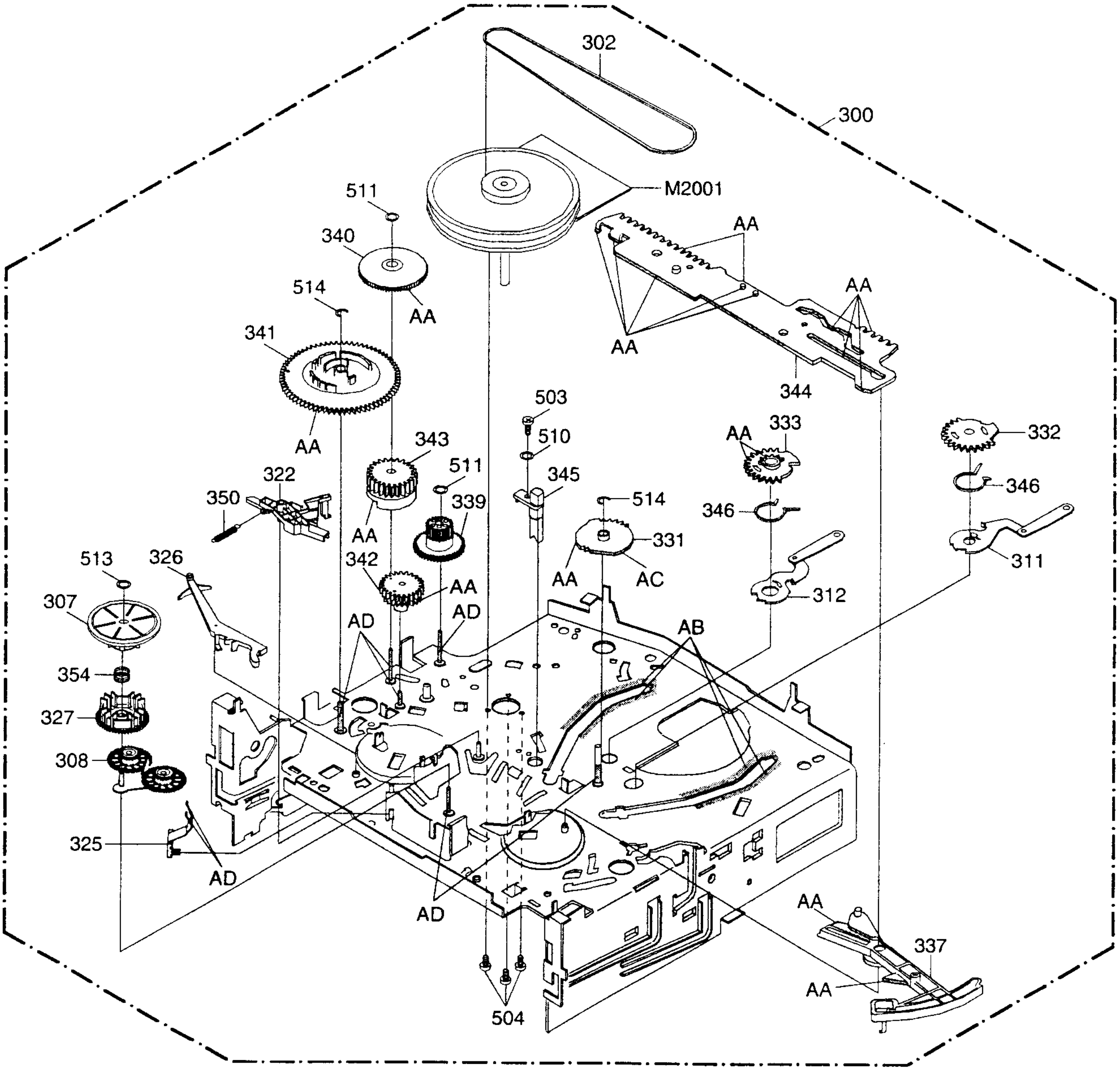
CHASSIS EXPLODED VIEW (TOP VIEW)


503
367
503
300
515
505
505
M2003
505
UN4001
335
319
313
334
AA
507
H5001
369
508
502
H5002
318
314
321
506
501
349
305
356
328
348
313
347
310
369
304
301
336
512
508
317
316
A
512
315
AA
370
338
361
355
AD
AB
303
309
AA
AA
320
353
AB
AA
M101
359
366
502
357
A
368
329
351
AA
364
BA
AD
PCB550
(DECK PCB ASS'Y)
366
330
358
306
509
502
365
AD
AD
AD
363
351
AD
AD
362
323
371
324
AD
AD
511
352
360

CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)


302
300
M2001
511
340
AA
514
341
AA
AA
344
AA
503
510
343
511
322
350
345
339
514
333
332
346
346
331
311
312
513
326
307
342
AA
AD
AD
AC
AB
354
327
308
325
AD
AD
AA
337
AA
504

CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
601	A4D410B720	CABINET,FRONT ASS'Y
602	701WPJA656	CABINET,FRONT
603	711WPAA049	PLATE,DISPLAY
604	712WPJA466	FLAP
605	743WKAA001	SPRING,FLAP
606	735WPJA038	BUTTON,DECK (A)
607	735WPJA039	BUTTON,DECK (B)
608	800WFA0020	CUSHION,LEG
609	702USS0025	CABINET,TOP
610	701WPA0348	HOLDER,DECK (A)
611	704WPA0007	HOLDER,DECK (R)
612	755WPA0009	PLATE,COVER POWER
613	752WSA0144	SHIELD,CASE HEAD AMP
614	753WUA0051	SPRING,EARTH HEAD AMP
615	753WSA0124	SHIELD,COVER HEAD AMP
616	753WUA0042	SPRING,EARTH HEAD AMP
617	702WSAA011	PLATE,BOTTOM
618	722522A007	SHEET,RATING
701	8110226084	SCREW,TAP TITE (P) BIND 2.6x8
702	8107240802	SCREW,TAP TITE (S) BIND 4x8
703	8146240644	SCREW,TAP TITE (S) BIND 4x6
704	8151230704	SCREW,TAP TITE (S)-R BIND 3x7
705	8107140B94	SCREW,TAP TITE (S) PAN 4x29
706	8110230604	SCREW,TAP TITE (P) BIND 3x6
707	8107230404	SCREW,TAP TITE (S) BIND 3x4
---	JB5X0300	POLYBAG
---	J4D41001	INSTRUCTION BOOK
---	J4D41002	WARRANTY CARD
---	J4D41007	QUICK SET-UP SHEET
---	791UHA0012	GIFT SHEET
---	792UHA0100	PACKAGE

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
300	A4D401B420A	DECK ASS'Y	A4D401B420A
301	85OA500022	AHC ASS'Y	
302	85OP200290	BELT,CAPSTAN (S)	
303	85OP900689	LEVER,REC	
304	85OP500083	BASE,AC HEAD	
305	85OP800324	SPRING,AC HEAD	
306	85OA000305	MAIN CHASSIS ASS'Y (S)	
307	85OA200077	CLUTCH ASS'Y (S)	
308	85OA200080	ARM,IDLER ASS'Y (S)	
309	85OP600556	ARM,SS BRAKE (S)	
310	85OP200292	REEL,T (S)	
311	85OA300061	LOADING ARM S ASS'Y	
312	85OA300062	LOADING ARM T ASS'Y	
313	85OA400182	GUIDE ROLLER ASS'Y	
314	85OA400188	BASE,INCL S ASS'Y	
315	85OA400196	BASE,INCL T(S) ASS'Y	
316	85OA400199	P5-3 ARM ASS'Y(S)	
317	85OA400174	PINCH ROLLER BLOCK	
318	85OA400175	TENSION ARM ASS'Y	
319	85OA400184	TENSION BAND ASS'Y (S)	
320	85OA400178	PINCH ROLLER LEVER ASS'Y	
321	85OA600188	BRAKE T ASS'Y (S)	
322	85OA600191	CAP BRAKE ASS'Y(S)	
323	85OA900213	LINK ASS'Y	
324	85OA900216	LINK LEVER ASS'Y	
325	85OP200284	LEVER,CLUTCH (S)	
326	85OP200285	ACTUATOR,CLUTCH	
327	85OP200286	GEAR,COUPLING	
328	85OP200291	REEL,S (S)	
329	85OP600541	WORM	
330	85OP600542	BRACKET,MOTOR	
331	85OP300178	GEAR,MAIN LOADING	
332	85OP300179	GEAR,LOADING S	
333	85OP300180	GEAR,LOADING T	
334	85OP300186	HOLDER,LOADING GEAR	
335	85OP400472	ADJUST,TENSION	
336	85OP400492	HOLDER,TENSION	
337	85OP400490	LEVER,TENSION	
338	85OP400475	COVER,P4	
339	85OP600543	GEAR,JOINT	
340	85OP600544	GEAR,MIDDLE	
341	85OP600554	CAM,MAIN (S)	
342	85OP600546	CAM,P5	
343	85OP600547	CAM,PINCH ROLLER	
344	85OP600561	ROD,MAIN(S)	
345	85OP700035	REFLECTOR,LED	
346	85OP800318	SPRING,LOADING GEAR	
347	85OP800334	SPRING,P5 (S)	
348	85OP800335	SPRING,BRAKE T (S)	
349	85OP800322	SPRING,TENSION	
350	85OP800336	SPRING,CAP BRAKE (S)	
351	85OP800325	SPRING,LOCKER	
352	85OP800326	SPRING,LINK	
353	85OP800328	SPRING,DAMPER	
354	85OP800330	SPRING,RING	
355	85OP800337	SPRING,SS BRAKE (S)	
356	85OP900680	OPENER,CASS	
357	85OP900683	CASS SIDE L	
358	85OP900684	CASS SIDE R	
359	85OP900702	TAPE GUIDE L(P,R)	
360	85OP900686	TAPE GUIDE R	
361	85OP900687	COVER,SENSOR L	
362	85OP900688	LEVER,FLAP	
363	85OP900690	CASS HOLDER	
364	85OP900691	LOCKER,L	
365	85OP900692	LOCKER,R	
366	85OP900694	SPRING,PACK	
367	85OP900695	BRACKET,TOP	
368	85OP900696	SPRING,CASS EARTH	
369	85OP400485	O-RING	
370	85OP800341	SPRING,P/R ARM	
371	85OP000467	COVER,DECK	

REF. NO.	PART NO.	DESCRIPTION	
501	8107126A04	SCREW,TAP TITE(S) PAN	2.6x10
502	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
503	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
504	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
505	810A126804	SCREW/WASHER(A)	M2.6x8
506	810B126404	SCREW/WASHER(B)	M2.6x4
507	8102120604	SCREW,PAN	M2x6
508	8102120304	SCREW,PAN	M2x3
509	8102130304	SCREW,PAN	M3.0x3.0
510	82A2675051	WASHER	2.6x7.5xT0.5
511	82P266005N	POLYSLIDER WASHER(CUT)	2.6x6.0xT0.5
512	82Q2647C5N	POLYSLIDER WASHER	2.6x4.7xT0.25
513	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
514	83ETW30000	E-RING	3.0
515	810A123504	SEMS A	M2.3x5.0
CP101	069R740018	CONNECTOR PCB SIDE	52044-0445
CP102	0694220139	CONNECTOR PCB SIDE	173979-2
H5001	1523D91034	HEAD (AUDIO CONTROL)	HVMXA1072A
H5002	1543D02013	HEAD (FULL ERASE)	HVFHP0032A
⚠ M101	85OA600190	LOADING MOTOR ASS'Y	
⚠ M2001	1594J98007	CAPSTAN DD UNIT	EP15BB
M2003	1589V11007	MICRO MOTOR	EP14BD
PCB550	A4C701B550	DECK PCB ASS'Y	VE8851
Q101	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
Q102	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
⚠ UN4001	A4D404B500	CYLINDER UNIT ASS'Y	A4D404B500

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
		RESISTORS		
⚠ R502	R3X18A010J	R, METAL OXIDE	1 OHM 2W	
⚠ R516	R65584010J	R, FUSE	1 OHM 1/4W	or
	R61584010J	R, FUSE	1 OHM 1/4W	or
	R63584010J	R, FUSE	1 OHM 1/4W	
⚠ R517	R65584391J	R, FUSE	390 OHM 1/4W	
⚠ R520	R65584271J	R, FUSE	270 OHM 1/4W	
⚠ R548	R63584R68K	R, FUSE	0.68 OHM 1/4W	
⚠ R1002	R615812R7J	R, FUSE	2.7 OHM 1W	
R4815	R001T6391J	RC	390 OHM 1/6W	
		CAPACITORS		
⚠ C503	P2162B104M	CMP	0.1 UF 250V AC	
⚠ C505	CB3930ML3M	CC	0.0033UF 250V	
⚠ C507	CB3LE0ML3M	CC	0.0033UF 250V	
C510	E02TFH680M	CE	68 UF 400V	or
	E02AFH680M	CE	68 UF 400V	
C4546	E50HU5010M	CE	1 UF 50V	
C4547	E02LT0331M	CE	330 UF 6.3V	
		DIODES		
D501	D17T002440	DIODE, SILICON	1SS244T-77	or
	D13TGMA020	DIODE, SILICON	GMA-02-BT	
⚠ D502	D2LXE65800	DIODE, SILICON	1N4005E-G23	
⚠ D503	D2LXE65800	DIODE, SILICON	1N4005E-G23	
⚠ D504	D2LXE65800	DIODE, SILICON	1N4005E-G23	
⚠ D505	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D507	D17T002440	DIODE, SILICON	1SS244T-77	or
	D13TGMA020	DIODE, SILICON	GMA-02-BT	
⚠ D513	D2LXE65800	DIODE, SILICON	1N4005E-G23	
⚠ D514	D28TELS2N2	DIODE, RECTIFIER	10ELS2N-TA1B2	
⚠ D515	D28T11ESN1	DIODE, SILICON	11ES1N-TA1B2	
D516	D1VT001330	DIODE, SILICON	1SS133T-77	
⚠ D517	D2LKB340L0	DIODE, SCHOTTKY	SB340L-6737	
⚠ D518	D23TGP15D0	DIODE, SILICON	RGP15D-G23	
⚠ D519	D97U03301B	DIODE, ZENER	MTZJ33B T-77	
⚠ D521	D97U02701B	DIODE, ZENER	MTZJ27B T-77	
D525	D2LXE65800	DIODE, SILICON	1N4005E-G23	
⚠ D527	D97U04R71B	DIODE, ZENER	MTZJ4.7B T-77	
D528	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D530	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D531	D97U01201B	DIODE, ZENER	MTZJ12B T-77	
D532	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D1001	0010600060	LED	SID1050CM	
D1002	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D1003	D92T1120B0	DIODE, ZENER	RD12FB-T7	
D1004	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D1006	D1VT001330	DIODE, SILICON	1SS133T-77	
D1007	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D4003	D1VT001330	DIODE, SILICON	1SS133T-77	
D4201	D97U06R81B	DIODE, ZENER	MTZJ6.8B T-77	
D4502	D97U01501B	DIODE, ZENER	MTZJ15B T-77	
D4503	D97X06R81C	DIODE, ZENER	MTZJ6.8C T-72	
		ICS		
⚠ IC501	I0BT065520	IC	STR-F6552	
⚠ IC502	I0Q90431L0	IC	NJM431L	
IC651	I07F529790	IC	BU2979K	
⚠ IC1001	I07SQ955AN	IC	BA6955AN	
IC1002	I56F57033A	IC	OEC7033A	
IC1004	IE1J0S31AH	IC	RE5VS31A	
IC1099	A4D101B015	IC	M24C08-BN6	
IC4001	I04F38217F	IC	HA118217F	
IC4501	I03F071580	IC	LA7158M	
IC4801	I53F4775M0	IC	LC74775M	
IC5501	I0KF79605H	IC	TDA9605H	
IC6601	I0KFA9873H	IC	TDA9873H	
		TRANSISTORS		
⚠ Q501	0002500560	PHOTO COUPLER	TLP621(D4-GR-LF2	
Q502	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	
⚠ Q507	TBWT009260	TRANSISTOR, SILICON	2SB926(S,T)-AA	
Q510	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	
⚠ Q511	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q512	TBWT009260	TRANSISTOR, SILICON	2SB926(S,T)-AA	
Q651	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1001	0002G00540	PHOTO COUPLER	GP1S566	
Q1002	0002G00540	PHOTO COUPLER	GP1S566	
Q1003	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1004	0002G00550	PHOTO COUPLER	GP1S94L	
Q1005	0002G00550	PHOTO COUPLER	GP1S94L	
Q1006	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
REF. NO.	PART NO.	DESCRIPTION		
		TRANSISTORS		
	TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK	or
	TN3TC05001	COMPOUND TRANSISTOR	2SC3396(CY)-TA	
Q1007	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK	or
	TN3TC05001	COMPOUND TRANSISTOR	2SC3396(CY)-TA	
Q1010	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK	or
	TN3TC05001	COMPOUND TRANSISTOR	2SC3396(CY)-TA	
Q4001	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q4002	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	
Q4003	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q4004	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q4005	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	
Q4006	TCWT2274K0	TRANSISTOR, SILICON	2SC2274K(E,F)-AA	
Q4007	TCWT2274K0	TRANSISTOR, SILICON	2SC2274K(E,F)-AA	
Q4008	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146	
Q4501	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146	
Q4801	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4802	T6YJ1037K0	TRANSISTOR, SILICON	2SA1037AKT146(R,S)	
Q6001	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q6003	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
		COILS &TRANSFORMERS		
L501	021W66220M	COIL, CHOKE	22 UH	
L502	021W66220M	COIL, CHOKE	22 UH	
⚠ L503	029T000083	COIL, LINE FILTER	0R3A433F20	
L4001	0316160028	COIL, BIAS OSC	1616002	
L4002	021673101K	COIL	100 UH	
L4003	021673101K	COIL	100 UH	
L4004	02167B100K	COIL	10 UH	
L4005	0316160018	COIL, BIAS OSC	1616001	
L4006	021673102K	COIL	1 MH	
L4007	021LA6390K	COIL	39 UH	
L4008	021LA6271K	COIL	270 UH	
L4009	021673101K	COIL	100 UH	
L4011	021LA6120K	COIL	12 UH	
L4012	021LA6221K	COIL	220 UH	or
	021LA6221J	COIL	220 UH	
L4013	021673101K	COIL	100 UH	
L4015	021673101K	COIL	100 UH	
L4201	021LA6100J	COIL	10 UH	
L4202	021LA6100J	COIL	10 UH	
L4501	021LA6220K	COIL	22 UH	
L4502	021LA6220K	COIL	22 UH	
L4504	021LA6220K	COIL	22 UH	
L4505	021673101K	COIL	100 UH	
L4506	021LA6220K	COIL	22 UH	
L4507	021LA6220K	COIL	22 UH	
L4508	021LA6220K	COIL	22 UH	
L4509	021LA6220K	COIL	22 UH	
L4510	021LA6220K	COIL	22 UH	
L4512	021LA6100K	COIL	10 UH	
L4801	021673101K	COIL	100 UH	
L4802	021673101K	COIL	100 UH	
L4803	021673101K	COIL	100 UH	
L4805	021L96220K	COIL	22 UH	
L4806	021LA6330K	COIL	33 UH	
L4807	021LA6390K	COIL	39 UH	
L5501	021673101K	COIL	100 UH	
L5502	021673102K	COIL	1 MH	
L6001	021673101K	COIL	100 UH	
L6002	021673101K	COIL	100 UH	
L6004	02167D101K	COIL	100 UH	
L6602	02167D101K	COIL	100 UH	
⚠ T501	0481280174	TRANSFORMER, SWITCHING	8128017	
		JACKS		
J4201	0607431012	JACK, RCA 3.5	LPR1251-0500	
J4204	0602411008	RCA, JACK	JPJ1195-010320	
J4501	063G100041	SOCKET, 21PIN *2	035_0_8083_00	
		SWITCHES		
SW601	0504201T32	SWITCH, TACT	SKQNAED010	
SW602	0504201T32	SWITCH, TACT	SKQNAED010	
SW603	0504201T32	SWITCH, TACT	SKQNAED010	
SW604	0504201T32	SWITCH, TACT	SKQNAED010	
SW605	0504201T32	SWITCH, TACT	SKQNAED010	
SW606	0504201T32	SWITCH, TACT	SKQNAED010	
SW607	0504201T32	SWITCH, TACT	SKQNAED010	
SW608	0504201T32	SWITCH, TACT	SKQNAED010	

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		SWITCHES	
SW1001	0508221001	SWITCH (LEAF)	SPVF130100
		P.C.BOARD ASSEMBLIES	
PCB010	A4D410B01A	PCB ASS'Y	VM9150B
PCB270	A4D405B27A	PCB ASS'Y	VE8837A
PCB550	A4C701B550	SEE CHASSIS REPLACEMENT PARTS LIST	
		MISCELLANEOUS	
B501	0246T03584	CORE, BEADS	BF40DTA-3.5X6X1
B502	0246T03584	CORE, BEADS	BF40DTA-3.5X6X1
B503	0246T03584	CORE, BEADS	BF40DTA-3.5X6X1
B504	0246T03584	CORE, BEADS	BF40DTA-3.5X6X1
BT601	1412004008	BATTERY, MANGAN	R03(AB)E_20_T
⚠ CD501	1206655816	CORD, AC	6655816
CD601	06CH23042A	CORD, EIS CONNECTOR	CH23042A
CP506	0694320049	CORD, EP CONNECTOR	1-1123724-2
CP651	069E230129	CONNECTOR PCB SIDE	8283_0312_00_000
CD1001	122S040804	CORD, JUMPER	1.25X4X83XC
CD1006	122L061501	CORD, JUMPER	2L061501
CD4102	122F051702	CORD, JUMPER	2F051702
CD6002	06CDL02002	RF, CABLE PAL FTZ	CDL02002
CP1001	06CH22076A	CORD, CONNECTOR	CH22076A
CP1002	069R750028	CONNECTOR PCB SIDE	52045-0545
CP1003	0697280590	CONNECTOR PCB SIDE	TMC-J08P-B1
CP1004	069R740028	CONNECTOR PCB SIDE	52045-0445
CP4001	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP4002	069R760028	CONNECTOR PCB SIDE	52045-0645
CP4003	0697120320	CONNECTOR PCB SIDE	TMC-T02X-E1
CUS011	800WF00004	CUSHION-A	
CUS012	800WF00004	CUSHION-A	
⚠ F501	080PT1R602	FUSE	21801.6
FH501	06710T0006	HOLDER, FUSE	EYF-52BC
FH502	06710T0006	HOLDER, FUSE	EYF-52BC
OS651	077Q000018	REMOTE RECEIVER	PIC26043LO
TM601	07660BM320	TRANSMITTER	SBHR00032A
⚠ TU6001	0162601019	RF, UNIT	TMDG2-107A
V651	096779R005	TUBE, FLUORSCENT DISPLAY	7-MT-201GA
X1001	100CT01207	CRYSTAL HC-49/U-S	12MHz
X1002	100C32R803	CRYSTAL DSVT-200	32.768KHz
X4001	100CF4R401	CRYSTAL HC-49/U	4.433619MHz
X6602	100CT4R009	CRYSTAL HC-49/U	4MHz

RESISTOR

RC.................. CARBON RESISTOR

CAPACITORS

CC.................. CERAMIC CAPACITOR
CE.................. ALUMI ELECTROLYTIC CAPACITOR
CP.................. POLYESTER CAPACITOR
CPP................. POLYPROPYLENE CAPACITOR
CPL................. PLASTIC CAPACITOR
CMP................ METAL POLYESTER CAPACITOR
CMPL.............. METAL PLASTIC CAPACITOR
CMPP............. METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M4D4-10B
O/R NO.	U994509